OCTOBER | 1956

products finishing

FINISHES ON METAL PRODUCTS

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LEA Compound

...INDUSTRY'S GREASELESS ABRASIVE COMPOSITION

100....a magic number!

Call it a milestone if you will, for 100 is the number of different grades of Lea greaseless Compound that are in use. We have about 80 price-listed; the balance are special grades made up for customers to take care of unusual finishing problems.

While 100 may be a milestone, it is in no sense our goal. Mere numbers is no objective. Rather it is serving customers in the steadily broadening field of surface finishing (metals, plastics, wood). If one of our many grades will not definitely bring the results wanted . . . not merely approximate them—our laboratory goes to work and develops a grade that will work. The size of the order doesn't count. The need for the special grade does.

That briefly, outlines our service to industry . . . a service that started in the twenties and has grown steadily over the years. Today, Lea products and recommendations go all over the world.

Burring, Buffing, Polishing, Lapping, Plating and Spray Finishing Manufacturers and Specialists in the Development of Production Methods, Equipment and Compositions. Manufacturers of Lea Compound and Leatrak. Industry's quality buffing and polishing compounds for over 30 years

LEA®
The Hallmark of Quality Products

THE LEA MANUFACTURING CO.
16 CHERRY AVE., WATERBURY 20, CONN.

Lea-Michigan, Inc., 14066 Piedmont Ave., Detroit 27, Mich.
Lea Mfg. Company of Canada, Ltd., 1256 Birchmount Road Scarborough, Ontario, Canada
Lea Mfg. Company of England, Ltd., Boston, England
Lea-Bonal, Inc., Main Office and Laboratory: 129-20 109th Ave., Jamaica 20, N. Y.
Manufacturing Plant: 237 East Aurora St., Waterbury 20, Conn.

For more data circle **140** on Reader Service Card

PRODUCTS FINISHING — OCTOBER, 1956

												2nd Cover			3rd Cover			4th Cover	
1	15	29	43	57	71	85	99	113	127	141	155	169	182	195	208	221	234	247	260
2	16	30	44	58	72	86	100	114	128	142	156	170	183	196	209	222	235	248	261
3	17	31	45	59	73	87	101	115	129	143	157	171	184	197	210	223	236	249	262
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5	19	33	47	61	75	89	103	117	131	145	159	173	186	199	212	225	238	251	264
6	20	34	48	62	76	90	104	118	132	146	160	174	187	200	213	226	239	252	265
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11	25	39	53	67	81	95	109	123	137	151	165	179	192	205	218	231	244	257	270
12	26	40	54	68	82	96	110	124	138	152	166	180	193	206	219	232	245	258	271
13	27	41	55	69	83	97	111	125	139	153	167	181	194	207	220	233	246	259	272
14	28	42	56	70	84	98	112	126	140	154	168								

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NAME _____ POSITION _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

Please send information and literature corresponding to numbers (or "covers") encircled.

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11	25	39	53	67	81	95	109	123	137	151	165	179	192	205	218	231	244	257	270
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PERMIT No. 7414
NEW YORK, N. Y.

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

3c POSTAGE WILL BE PAID BY—

Products Finishing

BOX 105
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NEW YORK 14, NEW YORK

Your Monthly Source For Finishing Ideas

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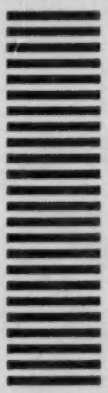

WHAT'S THE FASTEST WAY TO CLEAN METAL?
See page 11
WHAT'S THE MOST ECONOMICAL WAY?
See page 9
Some good things to know about Metal Cleaning

Oakite's FREE Booklet on Metal Cleaning

answers many questions that mean better production, more profit for you. Just look at the table of contents:

Tank cleaning methods
Electrocleaning steel
Electrocleaning nonferrous metals
Pickling, deoxidizing, bright dipping
Applying iron phosphate coatings in preparation for painting
Applying zinc phosphate coatings
Cleaning, removing rust and conditioning for painting in one operation
Machine cleaning methods
Paint stripping
Steam-detergent cleaning
Barrel finishing, burnishing
Better cleaning in hard-water areas
Treating wash water in paint spray booths
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FREE For your copy of the 44-page illustrated booklet, "*Some good things to know about Metal Cleaning*", write Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

Technical Service Representatives in Principal Cities of U. S. and Canada

Export Division Cable Address: Oakite

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE

For more data circle 141 on Reader Service Card

You polish with the "Touch of Gold" when your wheels or belts are coated with ALUNDUM B abrasive. This extremely hard, sharp grain cuts fast, clean and cool. And the Norton special high capillarity treatment means easier wetting with cement or glue — for maximum adhesion, longer wheel life and better polishing performance.

Norton ALUNDUM B abrasive consists of grains of uniform blocky shape. No flats, slivers or undersize grains to loaf on the job. No oversize grains to mar surfaces. Made in all grit sizes, from 20 through 240, to cover the widest range of polishing operations.

More, and better, polishing with every set-up

ALUNDUM B abrasive brings the cost-cutting, value-adding "Touch of Gold"*

Ask Your Norton Distributor for the booklet "Setting Up Metal Polishing Wheels and Belts." Or write to the nearest district office of NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone book, yellow pages. Behr-Manning Company, Troy, N. Y., division of Norton Company. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries G-311

NORTON ABRASIVES

Making better products... to make your products better

NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Behr-cat Tapes

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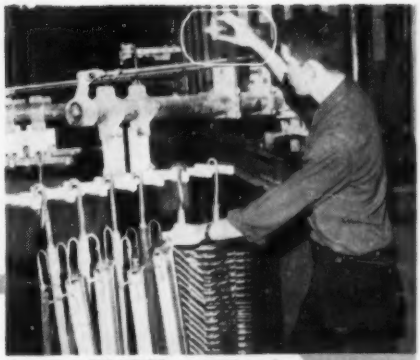
Now

automate many different finishing operations simply in one ANODIZING or ELECTROPLATING machine!



Operator sets DIAL-A-CYCLE on automatic anodizing machine in loading refrigerator parts plant. Carrier automatically by-passes or lowers parts into tanks as the dial setting dictates.

just set a dial... H-VW-M DIAL-A-CYCLE does the rest!

If you anodize or electroplate a number of different parts, each requiring a different *treatment . . . finish . . .* or *color*—these many separate operations can be automated in one multiple-finish conveyor with H-VW-M's remarkable new DIAL-A-CYCLE.

HERE'S HOW IT OPERATES. As racked parts are loaded on each carrier arm, a dial on the carrier is set for the particular cycle the load is to go through. Automatic conveying does the rest, lowering parts into the proper tanks, by-passing others, according to the dial setting.

As simply as that, unusual savings are realized in production time . . . labor . . . capital investment. Like to know more? Write today for facts about how DIAL-A-CYCLE can go to work in your plant!

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need

HANSON-VAN WINKLE-MUNNING COMPANY, MATAWAN, N. J.
Plants: **Matawan, N. J. • Grand Rapids, Mich.**
SALES OFFICES: Anderson (Ind.) • Baltimore • Beloit (Wisc.) Boston • Bridgeport • Chicago • Cleveland • Dayton • Detroit Grand Rapids • Los Angeles • Louisville • Matawan Milwaukee • New York • Philadelphia • Pittsburgh • Plainfield Rochester • St. Louis • San Francisco • Springfield (Mass.) Utica • Wallingford (Conn.)

H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

For more data circle **143** on Reader Service Card

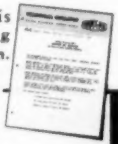
Put your metal cleaner *behind* the soil—between the soil and the metal—and you'll soon have the soil *off* the metal. That's the way you'll clean metal parts with . . .

Cowles NEW QC WASHING MACHINE CLEANER

Cowles NEW QC Washing Machine CLEANER penetrates through films of oil—crusts of drawing and stamping compounds—even into deeply recessed parts—pries the soil loose where pressure jets can't reach.

Improved penetrating, wetting, and emulsifying action in your washer without objectionable foaming.

GET THE COMPLETE STORY on this *brand NEW* Cowles QC Washing Machine Cleaner. **Send This Coupon.**



Cowles Chemical Company
7016 Euclid Avenue
Cleveland 3, Ohio

Please send Cowles QC Bulletin

Name_____

Company_____

Address_____

City_____ State_____

Cowles CHEMICAL COMPANY
CLEVELAND 3, OHIO

See Cowles' other advertisement on page 14

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products finishing

Vol. 21 No. 1 October, 1956

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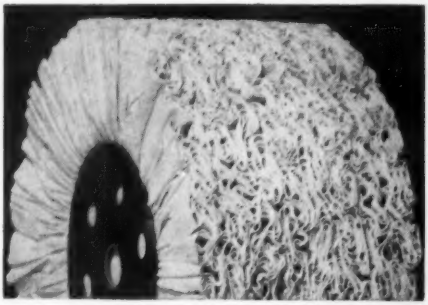
BETTER FINISH
AND
HIGHER COLOR
with new Churchill
Finger - Buff* #300H15



This new Churchill Finger-Buff* #300H15 is a new type of Finger-Buff* . . . unique in that the face of the buff is deliberately made *non uniform*. This eliminates all tendency to streak or gouge the work.

Manufacturers report that results with this new #300H15 are better finish with higher color on stainless, copper, and zinc die castings.

The Churchill Finger-Buff* #300H15 is made only with the best grade, heaviest weight, all new 86/93 bias-cut cotton cloth.

- Churchill Finger-Buffs* are competitively priced. Produced in all sizes from 6" to 18" diameters. For complete information write your problem.

*Churchill Finger-Buff, T.M. Reg. U. S. Pat. Off.

REPRESENTATIVES IN PRINCIPAL CITIES

Geo. R. Churchill Co., INC.

FREE Catalog

Dept. PF, Hingham, Mass.

Please send me FREE Catalog and complete information. My special buffing problem is .....

Name ..... Title .....

Firm .....

Street .....

City ..... Zone ..... State .....

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products finishing

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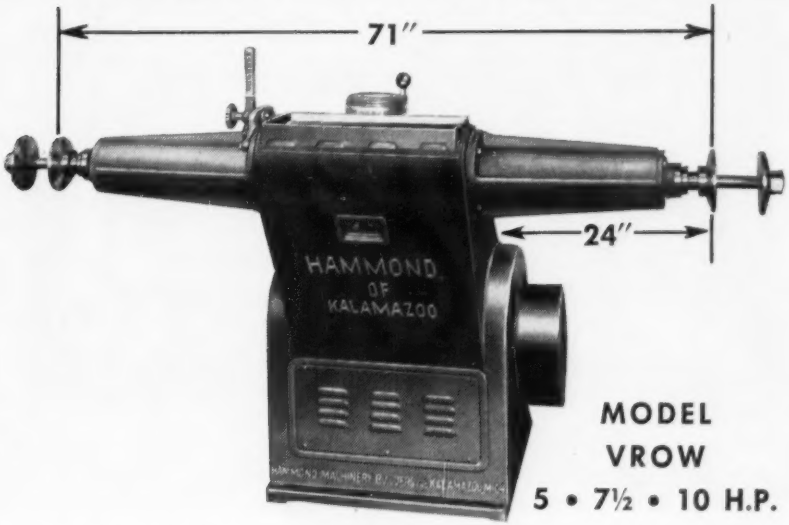
★ ★ ★

Circulation over 20,000— largest in the finishing field

Hammond OF KALAMAZOO

WIDE—SWING

POLISHING AND BUFFING LATHE



MODEL
VROW
5 • 7½ • 10 H.P.

Ideal for bulky parts. Spindle overhang and extended bearing housings enable two operators to work without interfering with each other.

Hammond WIDE SWING Variable Speed and Single Speed Polishing Lathes are available with one or two *independent spindles.*

Other models available with a capacity up to 50 HP. *Write for catalog* showing America's most complete line of Polishing and Buffing Lathes.

Hammond Machinery Builders INC.

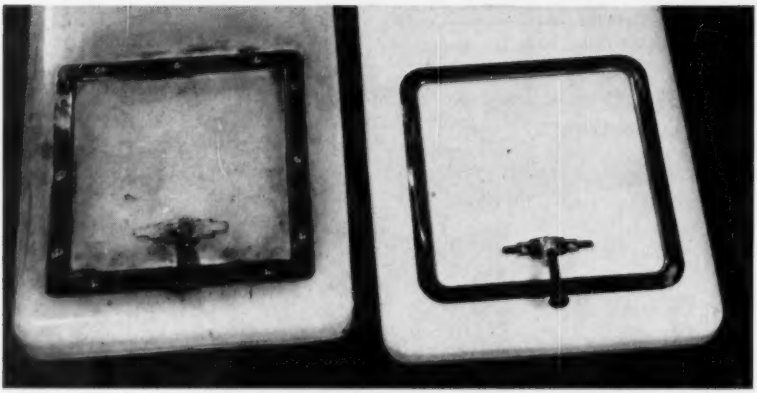
1622 DOUGLAS AVENUE • KALAMAZOO, MICHIGAN

See us at Booth No. 1250 Metal Show, Cleveland—October 8-12

For more data circle **146** on Reader Service Card

For superior color and gloss retention at high temperatures . . .

use Silicone Based Paints



▲ White organic enamel finish — Silicone based finish ▲

Here's the kind of superior color and gloss retention you can expect with paints based on Dow Corning silicone resins. After a few weeks exposure to temperatures up to 500 F, the finish on the incinerator cover at left is ruined, whereas the silicone based finish on the cover at right looks like new.

Finishes based on Dow Corning silicones provide superior resistance to corrosion and weather.

Your products still look *good as new after years of service* when you specify Dow Corning silicones in the finishes you use.

Write today for a FREE personal copy of this new, fact-filled brochure which contains a list of paint manufacturers who sell silicone based paints.

Dept. 5010

DOW CORNING CORPORATION
Midland, Michigan

DOW CORNING SILICONES

first in silicones

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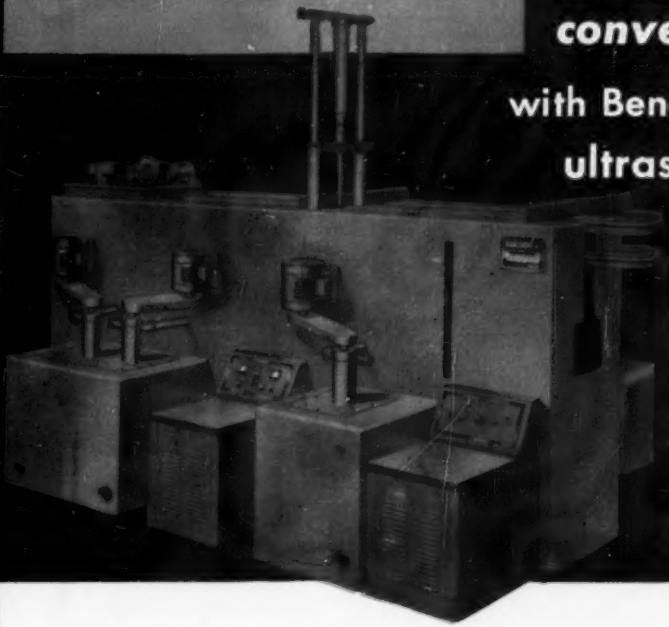
ULTRASONIC METAL CLEANING—BETTER, AT LESS COST!

Ransohoff

automatic indexing double monorail conveyor

with Bendix-perfected ultrasonic unit



CONVEYORIZED ULTRASONIC CLEANING SYSTEM

"Scrubs with Sound" saves time, space and money

- Wash • Rinse
- Ultrasonic Cleaning
- Rinse • Dry

Combining an ingenious conveyor design with proven Bendix ultrasonics, the Ransohoff Conveyorized Ultrasonic System handles "impossible" cleaning jobs on an entirely automatic basis!

No part is too difficult to clean economically . . . regardless of blind holes and difficult recesses in castings, engine parts, valve bodies, etc. No part is too fragile to be thoroughly cleaned by this method.

The pictured 5-stage ultrasonic machine performs a complete cleaning job—fast and automatically. Operations include: wash, rinse, ultrasonic cleaning, rinse and dry.

For complete details of Ransohoff ultrasonic cleaning systems and other equipment, write **Ransohoff, Inc., 610 North Fifth St., Hamilton, O.**

Ransohoff *An old name... the newest ideas*

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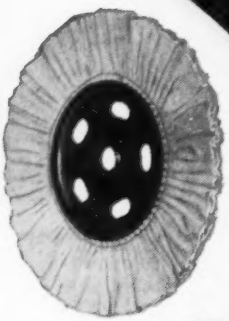
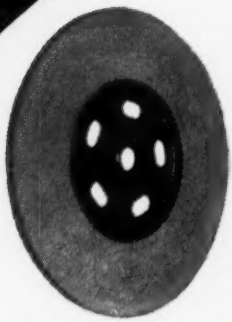
FORMAX

the Perfect Combination

FROM START TO FINISH





ZIPPO CLOTH BUFFS

These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

BUFFING COMPOUNDS

Formax produces a complete line of buffing compounds in bar, tube and liquid form.

Our extensive manufacturing, laboratory and testing facilities are at your disposal.

ZIPPO SISAL BUFFS

You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

Other Formax products include the well-known C-20 Flexible Contact Wheels and F-26 Abrasive Belt Grease Stick.

Descriptive Catalogs Sent on Request

FORMAX MFG. CORP.

DETROIT 7, MICHIGAN

"THE FOUR McALEERS"

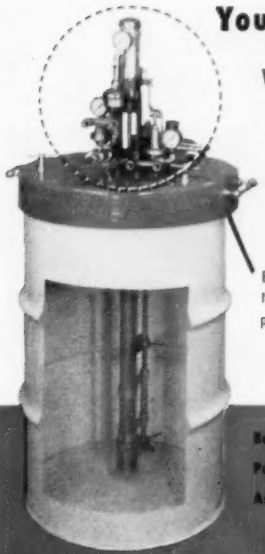
For more data circle **149** on Reader Service Card

You can work **D.F.D.*** *Direct From Drums

with this **NEW air-operated**

BALCRANK® *Jet Power* PUMP for paint

BALCRANK air-operated pumps are designed to meet all of the exacting requirements of the line circulating and other paint systems.



Balcrank Pump Assemblies . . .

Model P-10 for 55 gallon drums

Balcrank Paint Pumps have already established unique performance records. Our Engineering Staff can adapt this experience to your needs.

- Pump primer or finish materials at HOT or cold temperatures.
- Provide constant pressure and volume at spray guns without pulsation.
- Maintain continuous flow without pressure in or on the container.
- Supply up to 8 or more spray guns — either syphon or pressure type.
- Include air-operated propeller type agitator to insure uniform mixing.
- Eliminate drum-transfer waste and costly clean-up time.
- Eliminate conventional pump packing seals — which wear, then leak.
- Models for 55 gallon drums, with or without airlifts, 5 and 10 gallon pails or line systems out of storage tanks.

For over 50 years — Balcrank has served the Machine Tool and Automotive industries, specializing in pressure-pumping of oils, greases, viscous and abrasive materials.

NOW — Balcrank research and the best engineering skill have developed a greatly improved pump for paint and allied products. New design provides for trouble-free handling of ferrous oxide and other abrasives commonly affecting pump service.

Can we send you a copy of the new FREE catalog?

Our sales representative has a story that will make "dollars and sense" to you. Address your inquiry to Department 210.

INDUSTRIAL **BALCRANK®** PUMPS

Industrial Pump Division
BALCRANK INC.
42 Disney Street
Cincinnati 9, Ohio

50 YEARS of SERVICE

© 1956 BALCRANK INC.

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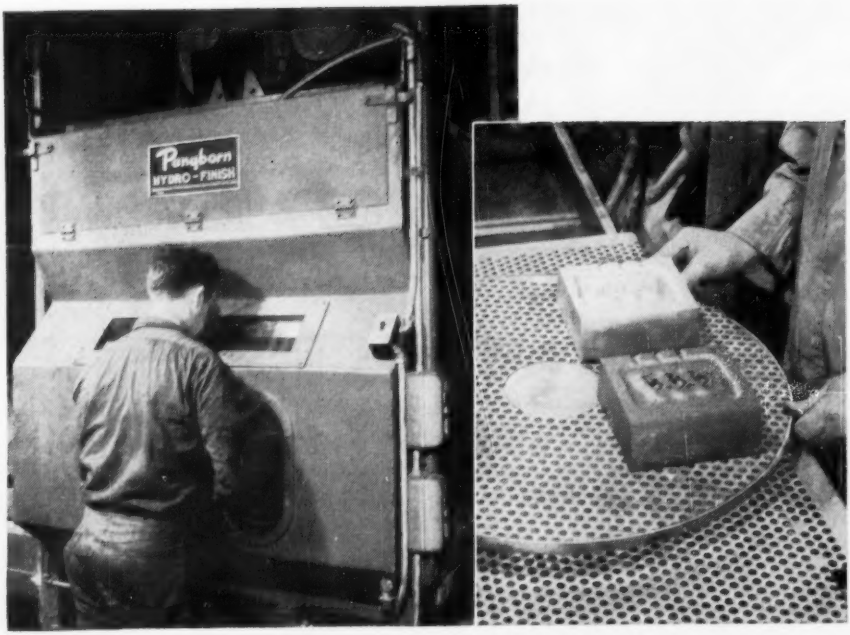

Pangborn HYDRO-FINISH wet blasting Saves $22,500 a year for Imperial Brass!

Pangborn Hydro-Finish wet blasting is used at Imperial Brass Mfg. Co., Chicago, to remove heat scale and carbon deposits from dies. Imperial Brass is highly gratified with results. Hydro-Finish does a perfect cleaning job and gives a smooth finish, with no breakdown of sharp edges or loss of tolerances. It has required no maintenance in its 1½ years of operation. And Hydro-Finish has cut time and labor costs so drastically that the firm saves $22,500 a year on this step alone!

If *you* clean dies and molds, you should investigate Pangborn Hydro-Finish . . . now offering even lower investment and more efficient operation by using air jet sluriators instead of a pump. Write for Bulletin 1403 to PANGBORN CORP., 5000 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment.*

Pangborn

BLAST CLEANS CHEAPER

2-H

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Better, Faster, Lower Cost Plating of Small Lots!

NEW! LASALCO'S

Model 9 x 15 Utility BARREL PLATER

with High Temperature Plexiglas Cylinder

No Other Plater At Its Price Can Match It!

- Easy! Just hang it on the cathode rod in any plating tank and plug into nearest electric outlet
- Hexagon shaped cylinder has internal breaker strips to insure interchange of work necessary for more uniform plating
- Positive smooth 3-gear drive with Plexiglas gears eliminates plate-up on drive mechanism
- Dragout loss is cut to a minimum because barrel rotates as it is lifted from solution
- Double flexible connection insures positive contact
- Plexiglas cylinder resists all normal plating solutions and temperatures up to 180° F.
- Rugged, specially designed geared-type motor
- Nothing plates but the load—never any tree-up on cylinder
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Vol. 21, No. 1

OCTOBER, 1956

• • • • editorial • • • •

The Stranger Is You!

One movie film being used to announce, publicize, and explain the purpose of the 1956 UNITED APPEAL or COMMUNITY CHEST campaign pictures an unnamed stranger walking about the streets of a city, helping people find a way out of many different kinds of trouble. The action of several of the agencies supported by these funds is portrayed by example in a most effective way. At the end of the film, the stranger is identified at YOU—each individual who makes a contribution to a UNITED APPEAL or COMMUNITY CHEST Fund.

In rural America, as many of us can still remember, the word "neighbor" had a special significance. When disaster struck anyone in the community, the neighbors gathered and carried the load or did what could be done for the unfortunate one in their midst. This desire and willingness to help enabled many a family to overcome difficult situations of various kinds.

As our cities have grown huge, and as people in rural communities have become less dependent upon one another, the word "neighbor" has lost much of its former meaning. This tendency to become self-centered and oblivious to those around us is perhaps one of the highest prices that we have had to pay for what we call "progress."

Since our present social organization makes it difficult to give personal attention to our less-fortunate neighbor's need, a program such as that developed and sponsored by the UNITED FUND groups is required to keep us aware of our community responsibilities. Our dollars can make possible the help that we would like to give personally.

Impersonate the "stranger," and be a good neighbor by giving generously to your UNITED APPEAL, UNITED FUND, or COMMUNITY CHEST.

Ezra A. Blount

—EDITOR

34th Annual Meeting

FEDERATION OF PAINT AND VARNISH PRODUCTION CLUBS

1956 Paint Industries' Show

Netherland-Hilton Hotel • Cincinnati, Ohio

October 21-24, 1956

Clyde L. Smith
President

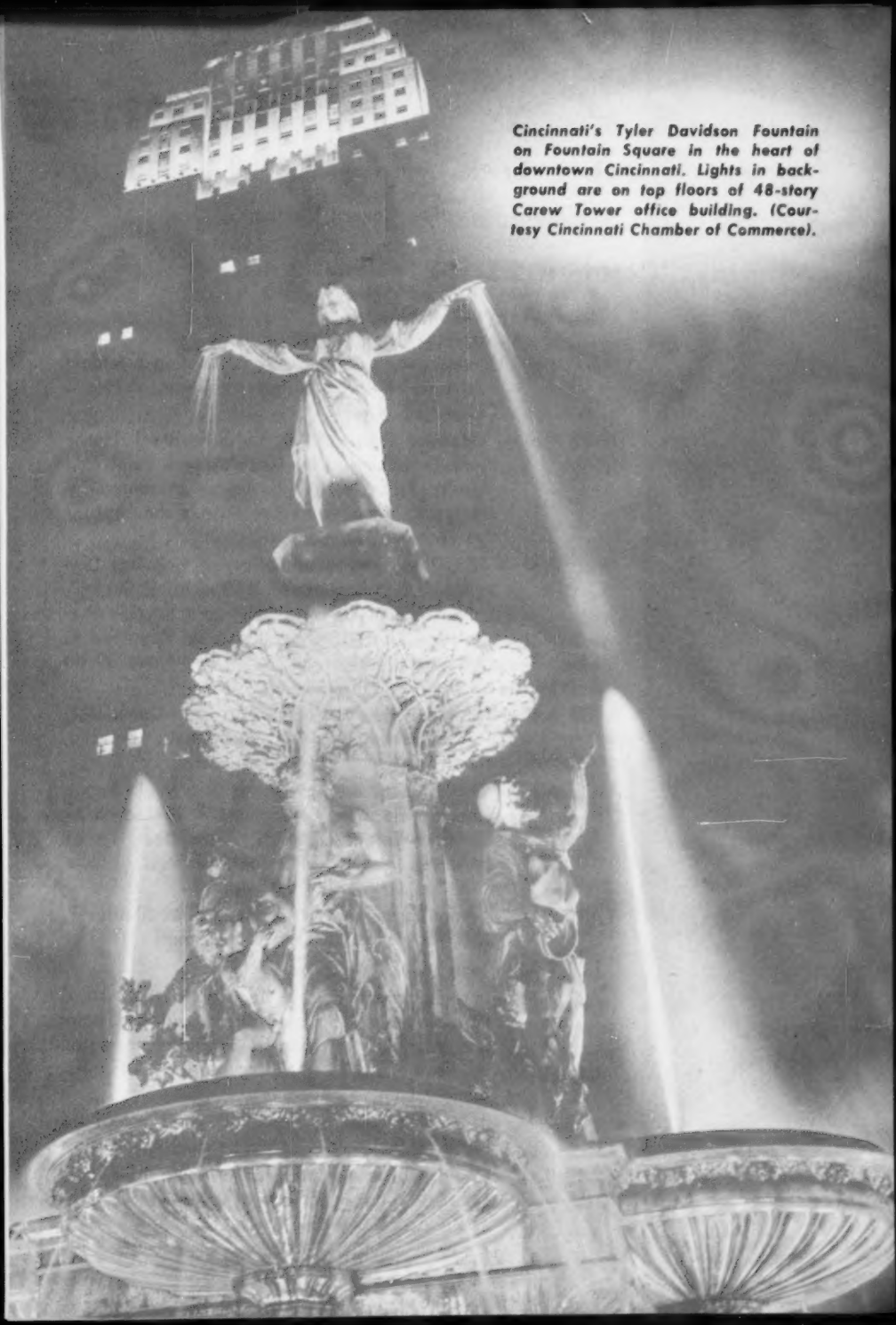
Milton A. Glaser
President-Elect

Charles P. Taft
Keynote Speaker

Howard G. Sholl
Treasurer

William L. Foy
Meeting Chairman

C. Homer Flynn
Executive Secretary



Cincinnati's Tyler Davidson Fountain on Fountain Square in the heart of downtown Cincinnati. Lights in background are on top floors of 48-story Carew Tower office building. (Courtesy Cincinnati Chamber of Commerce).

Meeting

Sunday, October 21

1:15 P. M.—Federation Council Meeting

Monday, October 22

10:00 A.M.—Meeting Opens
Invocation by Verne C. Bidlack
Greetings—Clyde L. Smith, Federation president
Welcome—William L. Foy, chairman of Host Committee

10:20 A.M.—"Extender Pigments in Blister-Resistant House Paints." Sponsored by Northwestern Paint and Varnish Production Club. To be presented by Merton C. Hilke. John Knuteson is chairman of this Technical Committee.

10:40 A.M.—"The Deterioration of Protective Coatings Due to Molds and Bacteria (A Bibliographic Study)." Sponsored by Chicago Paint and Varnish Production Club. To be presented by Raymond R. Pfohl, chairman of Technical Committee 30 on Molds.

11:00 A.M.—Report of the Federation Corrosion Committee. To be presented by Dr. Joseph W. Tomecko, chairman.

11:15 A.M.—"Some Practical Applications of a Wide Range Thin Film Recording Viscometer." Sponsored by Oil and Colour Chemists' Association. To be presented by C. C. Mell and A. J. Ford, of Blundell, Spence & Co., Ltd., England.

11:35 A.M.—Keynote address by the Honorable Charles P. Taft, Mayor of the City of Cincinnati.

1:00 P. M.—Paint Industries' Show opens.

2:00 P. M.—"Fire-Retardant Paints: III (Chlorinated Alkyd Paint Systems." Sponsored by Baltimore Paint and Varnish Production Clubs. To be presented by Raymond C. Crippen, chairman of Fire-Retardant Paints Committee.

2:20 P. M.—Address by Joseph F. Battley, president of the National Paint, Varnish and Lacquer Association.

2:40 P. M.—The Annual Joseph J. Mattiello Memorial Lecture. Maurice Van Loo, director of Paint Research, The Sherwin-Williams Co.

34th Annual Meeting, F.P.V.P.C.

Timetable

3:40 P. M.—"The Comparative Evaporation Rates of Paint Solvents: II." Sponsored by the New York Club. To be presented by E. G. Shur, chairman of Technical Subcommittee 66.

4:00 P. M.—"Polyvinyl Acetate Emulsions for Outdoor Paints." Sponsored by the Federation of the Associations of Technicians in the Paint, Varnish, Lacquer and Printing Ink Industries of Continental Europe. To be presented by Dr. George Schulz, of FATIPEC.

4:20 P. M.—"The Search for an Incompatability Test." Sponsored by the Cleveland Club. To be presented by Edward L. Brazet. Robert M. Evans is chairman of this Technical Committee.

9:00 P. M.—Paint Industries' Show closes.

Tuesday, October 23

9:00 A.M.—Paint Industries' Show opens.

9:00 A.M.—"The Effect of Light of Different Wave Lengths on the Degradation of Clear Coatings." Sponsored by the Pacific Northwest Club. Presented by Dan Jarvie, Technical Committee chairman.

9:20 A.M—"A Method of Determining Brushability by Instrumentation." Sponsored by the New England Club. To be presented by Edward Berberian, chairman of this Technical Committee.

9:40 A.M.—"Exposure Characteristics of Clear Finishes for Exterior Wood Surfaces." Sponsored by the Golden Gate Club. To be presented by Neil Estrada, chairman of the Technical Committee.

10:00 A.M.—Panel Discussion: "Chemical Resistant Coatings." Raymond C. Adams, moderator, Gilman Paint & Varnish Co.; Harry Howard, Shell Chemical Co.; R. D. Ullrich, Hercules Powder Co.; William H. McKnight, Bakelite Co; John Warner, Goodyear Tire & Rubber Co.

11:00 A.M.—"An Evaluation of Anti-Skinning Agents in Clear Vehicles." Sponsored by the Philadelphia Club. To be presented by P. J. Whiteway, Jr., chairman of this Committee.

11:20 A.M.—"Factors Affecting Freeze-Thaw Stability Tests of Latex Paints." Sponsored by the Louisville Club. To be presented by E. F. Schumacher, chairman of the Technical Committee.

34th Annual Meeting, F.P.V.P.C.

Meeting Timetable (continued) . . .

11:40 A.M.—"Blackening Effect of Hydrogen Sulphide on Exterior White House Paints." Sponsored by the Pittsburgh Club. To be presented by Herman J. Kasch. Gerald B. Ward is chairman of the Technical Committee.

5:00 P.M.—Paint Industries' Show closes.

7:00 P.M.—Annual Banquet, Entertainment, and Dance.

Wednesday, October 24

9:00 A.M.—Panel Discussion: "Production."
John C. Moore, consultant, is moderator; Aaron Barkman, The Sherwin-Williams Co.; Martin E. Schleicher, McDougall-Butler Co., Inc.; W. S. Herner, The Glidden Co.; M. S. Kaye, Maas & Waldstein Co.; James F. Foy, Foy Paint Co.

10:00 A.M.—Color Measurement Forum.
Introduction by the moderator, Frank S. Grundy, of Imperial Flo-glaze Paints, Ltd.

10:05 A.M.—"Basic Elements in Color Measurement." To be presented by Dr. Isay Balinkin, of the University of Cincinnati.
Forum on Practical Applications of Colorimetry in Development and Control of Organic Finishes.

10:50 A.M.—"Color Measurement With the General Electric Spectrophotometer." To be presented by Mark P. Morse, of E. I. duPont de Nemours & Co., Inc.

11:05 A.M.—"Use of Gardner Color Difference Meter for Production Control of Shading Operations." To be presented by Sam J. Huey, of The Sherwin-Williams Co.

11:20 A.M.—"An Application of the 'Colormaster' Differential Colorimeter for Control and Evaluation of Maintenance Paints." To be presented by Henry A. Tuttle and Melvin M. Gerson, of Ford Motor Co.

11:35 A.M.—"Color Measurement With the I.D.L. Color Eye." To be presented by William C. Parle, of California Ink Co.

11:50 A.M.—"Visual Control of Color (The Davis-Bruning Colorimeter)." To be presented by A. J. Bruning, of H. B. Davis Co.

34th Annual Meeting, F.P.V.P.C.

12:05 P. M.—"An Application of the Beckman Model DU Spectrophotometer to Paint Color Control." To be presented by Norman R. Pugh, of Sears, Roebuck & Co.

12:20 P. M.—Open discussion of papers.

1:00 P. M.—Paint Industries' Show opens.

2:00 P. M.—"Adhesion and Adhesives." To be presented by Dr. James S. Long, of the University of Louisville.

2:30 P. M.—Panel Discussion: "Blister Proof Paints." William E. Hood, moderator, Industrial Paint Mfg. Co.; E. G. Carlson, Jr., Western Paint & Varnish Co.; E. F. Schumacher, Devoe & Raynolds Co., Inc.; W. G. Vannoy, E. I. duPont de Nemours Co., Inc.; James Porter, Archer-Daniels-Midland Co.; Sidney Werthan, New Jersey Zinc Co.; P. G. Boermans, Pittsburgh Plate Glass Co.

3:30 P. M.—Annual Business Meeting of the Federation. Report of election and announcements.

6:00 P. M.—Annual Meeting, Paint Industries' Show close.

34th Annual Meeting, F.P.V.P.C.

List of Exhibitors in 1956 Paint Industries' Show

(All exhibits are in Netherland-Hilton Hotel)

Firm	Booth No.
Abbe, Inc., Paul O.	434
Advance Solvents & Chemicals Corp.	306-07
Ambrose Co., C. M.	406
Anderson-Prichard Oil Corp.	334
Archer-Daniels-Midland Co.	343-44
Atlas Electric Devices Co.	408
Bakelite Co.	331-32-33
Baker Castor Oil Co.	305
Barrett Div., Allied Chemical & Dye Corp.	303-04
Beckman Laboratories, Inc.	301
Bennett Industries, Inc.	337
Borden Co., Chemical Div.	440
Brighton Corp.	449
Burt Machine Co.	404-05
Cabot, Inc., Godfrey L.	429-30
Cambridge Industries Co.	448
Carbide & Carbon Chemicals Co.	350-51
Carbola Chemical Co., Inc.	415
Carbon Dispersions, Inc.	414
Cargille, Inc.	335
Catalytic Combustion Corp.	436
Celanese Corp. of America, Chemical Div.	341-42
Celanese Corp. of America, Plastics Div.	446-47
Chisholm-Ryder Co. of Pennsylvania	426
Colton Chemical Co.	435
Columbian Carbon Co.	313
Commercial Solvents Corp.	419-20
Cuno Engineering Corp.	411
Day Co., Inc., J. H.	433
Dewey & Almy Chemical Co.	348
Dow Chemical Co.	318-19

Firm	Booth No.
DuPont de Nemours & Co., Inc., E. I.	450
Eastman Chemical Products, Inc.	346-47
Epworth Mfg. Co.	403
Farnow, Inc.	456
Firestone Plastics Co.	438
General Electric Co.	336
Goodyear Tire & Rubber Co.	326-27
Harshaw Chemical Co.	328-29
Hercules Powder Co.	316-17
Heyden Chemical Corp.	345
Hockmeyer, Herman & Co.	428
Kellogg, Spencer & Sons, Inc.	320-21
Kent Machine Works, Inc.	407
Kinetic Dispersion Corp.	422-23
Lehmann & Co., Inc., J. M.	416
Metals Disintegrating Co., Inc.	424
Mineral Pigments Corp.	330
Minerals & Chemical Corp. of America	340
Monsanto Chemical Co.	323-24
Morehouse-Cowles, Inc.	412-13
Naftone, Inc.	322
Neville Chemical Co.	431-32
Nopco Chemical Co., Inc.	302
Nuodex Products Co., Inc.	314-15
Oronite Chemical Co.	455
Pacific Vegetable Oil Corp.	442
Patterson Foundry & Machine Co.	409-10
Pennsylvania Industrial Chemical Corp.	309
R B H Dispersions	308
Reichard-Coulston, Inc.	439
Reichhold Chemicals, Inc.	451-2-3-3A
Rohm & Haas Co.	401-02
Ross & Rowe, Inc.	325
Ross & Son Co., Charles	427
Sharples Chemicals, Inc.	437
Shawinigan Products Corp.	454
Shell Chemical Corp.	311-12
Shell Oil Co.	338-39
Silberline Mfg. Co., Inc.	441
Tall Oil Association	444
Thibault & Walker Co.	443
Troy Chemical Co.	445
Troy Engine & Machine Co.	421
Union Bag & Paper Corp.	349
U. S. Stoneware Co.	457
Washburn Co., T. F.	425
Williams & Co., C. K.	310
Witco Chemical Co.	417-18

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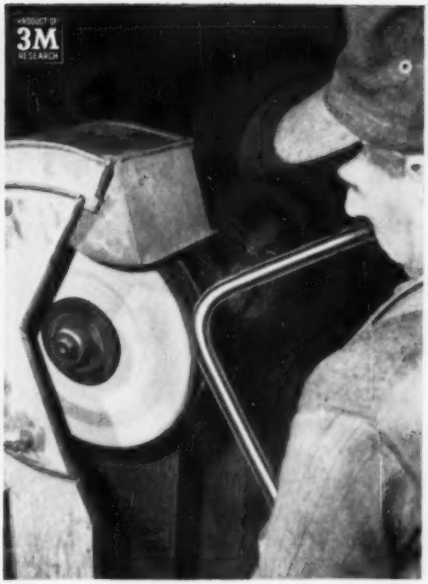
Colorimetric Exhibits

(North Exhibit Hall)

Firm	Booth No.
Container Corp. of America	CME 5
Curry & Paxton	CME 4
Gardner Laboratory, Inc.	CME 8
General Electric Company	CME 2
Instrument Development Labs., Inc.	CME 1
Macbeth Daylighting Corp.	CME 3 & 6
Manufacturers Engineering & Equipment Co.	CME 7

Special Exhibits

Evaporometer—New York Paint and Varnish Production Club.
Heckel Publishing Co., Inc.
Hilton-Davis Chemical Co.
Lacquer Information Center



New "PG" Wheel hikes production 40%

1. PRODUCTION PROBLEM: The Albert Plating Works of Brooklyn, N. Y., bends, finishes and plates cold-rolled steel tubing chair backs. The finishing operation—removing stretch marks and blending the steel surface prior to plating—was formerly a two-step job: grinding with a Grit #180 set-up wheel, then surfacing with a grease-coated stitched buff wheel. Production was slow and costs high because of constant wheel dressing.

2. SOLUTION: A 3M Representative suggested that this company switch to the amazing new "PG" Wheel, Grit #320. The "PG" Wheel, lubricated with tallow, replaces *both* the set-up wheel and the buff, and has increased production 40%. Down time is cut to the bone because each "PG" Wheel lasts a *full week*. Too, the "PG" Wheel produces a far superior finish on the tubing, making a superior and more consistent final chrome-plated surface.

A 3M Representative can help you solve your grinding and finishing problems, too. Call him today. Or write Minnesota Mining and Manufacturing Co., Dept. FH-106, St. Paul 6, Minn., for full facts about the amazing new "PG" Wheel.

Made in U.S.A., by MINNESOTA MINING AND MFG. CO., St. Paul 6, Minn. Also makers of "Scotch" Brand Pressure-Sensitive Tapes, "Scotch" Brand Magnetic Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "3M" Abrasives, "3M" Adhesives. Export Sales Office: 99 Park Avenue, New York 16, N. Y. In Canada: P.O. Box 757, London, Ontario.

For more data circle 271 on Reader Service Card

Fume Combustion

By R. J. RUFF
President, Catalytic Combustion Corporation
Detroit, Michigan

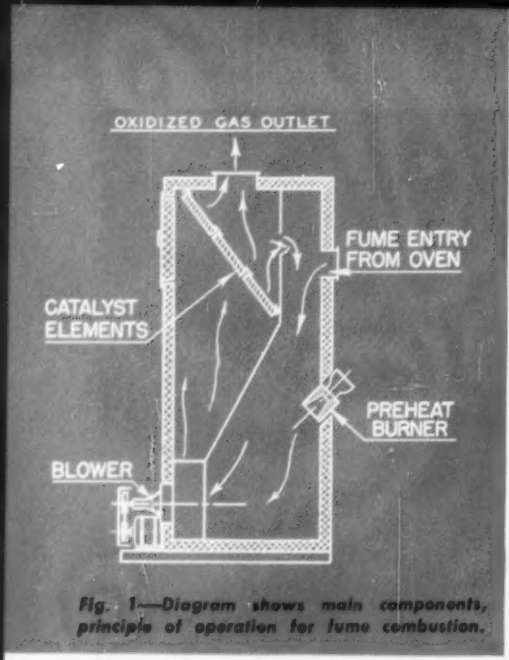


Fig. 1—Diagram shows main components, principle of operation for fume combustion.

SEVERAL FACTORS ARE CAUSING INCREASED INTEREST in the destruction of fumes in the exhausts of metal decorating ovens. Existing and anticipated air pollution control regulations in many cities are forcing clean-up of process exhaust gases. Also, there has been a growing realization that vaporized solvent released from the work during the baking process represents potential heat energy, the recovery value of which is growing with increasing fuel costs. It is the function of this paper to describe in practical terms the manner in which the fumes from metal decorating ovens are destroyed by catalytic combustion, and the performance characteristics of standard fume combustion systems recently installed on coating ovens.

The precise mechanism of catalytic oxidation is not well understood. Suffice it to say that the exposed surface of the catalyst absorbs both oxygen and hydrocarbons from an air stream, and causes them to react on the surface with the liberation of heat energy and the normal products of combustion; namely, carbon dioxide and water vapor. This reaction will carry forward to completion so long as the proper climate for catalysis is maintained. In general, the fumes must be preheated to catalytic ignition temperature, which may vary from 500 deg. F to approximately 625 deg. F. for the usual volatiles released in tin plate coating operations.

The heat liberated is proportional to the concentration of fumes in the exhaust gases. Where this concentration occurs in trace quantities only, the temperature rise of the exhaust gases through catalytic combustion may be so low as to prevent measurement with industrial type temperature thermometers. On the other hand, if the metal decorating oven is being vented at full ¼-L.F.L. concentration — the normal maximum frequently recommended by insurance underwriters—the temperature rise will be approximately 715 deg. F. If the exhaust from a metal decorating oven is at 300 deg. F., and carries a concentration of ¼-Lower

for Metal Lithographing Ovens

Flammable Limit, then, without added external heat, catalysis can convert these fumes to odor-free and color-free gases at 1015 deg. F.

Catalytic oxidation reactions can be accomplished with a number of totally different types of "active" surfaces.

In metal decorating, as in most fume disposal applications, temperatures are low and consequently it becomes necessary to utilize a highly active surface, having the minimum practical catalytic ignition temperature. For this reason, metals of the platinum family are normally used.

Since the catalytic combustion reaction is primarily a surface reac-

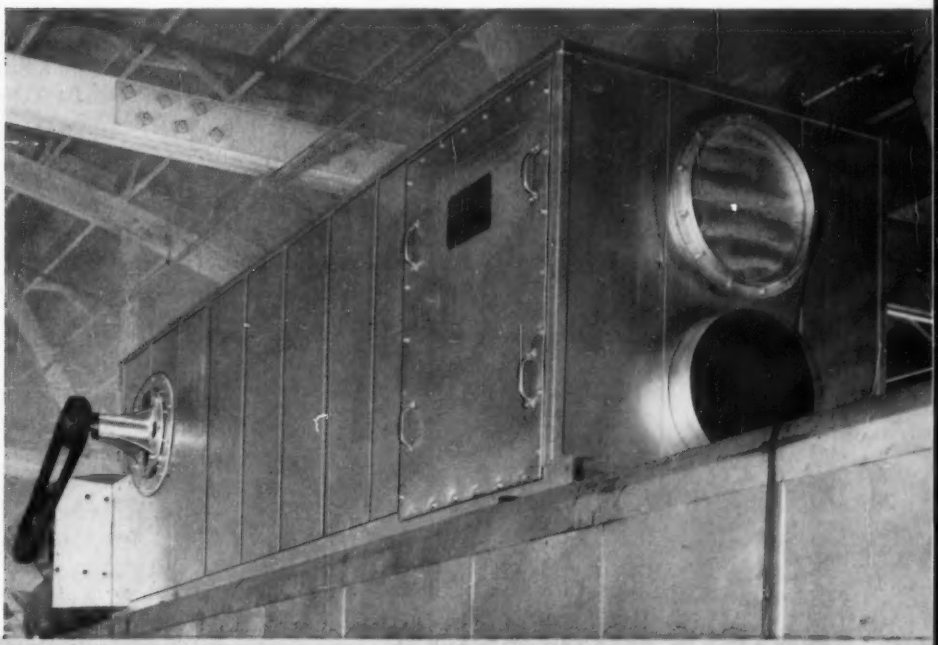


Fig. 2—Fume combustion unit on baking oven at Advance Metal Lithographing Co., Los Angeles.

tion, it is desirable to spread the precious metals over the largest surface area possible, proportional to the quantity used. The surface on which the precious metal catalyst is applied is called the "catalyst support," and is conventionally of refractory material.

The precious metals are electroplated on thin ribbons of nickel alloy, which are crimped and packed in the form of a mat, and conditioned for activity. Similar activated screens form the entry and discharge surfaces and the mat is held in an alloy channel container. In appearance, the finished catalyst element is similar to a metallic air filter element. An element of this type, having external dimensions of 18 by 24 by 2½ inches thick has a nominal through-put capacity of 700 s.c.f.m. As many of these elements as are necessary for the total volumetric requirements are racked up, side by side, on an asbestos-gasketed structural frame, securely held in place by stud bolts.

The fume combustion system consists essentially of an insulated housing, with inlet and outlet duct connections, containing a preheat burner with necessary ignition, control, safety and limit protective circuits, exhauster (which replaces the conventional oven exhauster), and catalyst elements (Fig. 1). The fumes enter, are preheated to the required catalytic ignition temperature, and flameless combustion occurs in the catalyst bed. A portion of the hot oxidized gases on the discharge side of the catalyst are recycled. In this way, a substantial portion of the heat required for maintaining catalytic ignition temperature is furnished by the recycled gases. The entire assembly (Fig. 2) is mounted on the roof of the oven (Fig. 3).

Normally, an operating control panel including the safety disconnect switch, motor starter, control transformer, conventional flame failure protection equipment, and necessary relays for interlocking with the oven heating circuit are furnished with the assembly.

For illustrating the performance of an R-C System, we have selected data from a typical coating oven installation. The oven handles conventional size sheets at approximately 70 per minute, on vinyl and alkyd coatings, with solvent loads in the

NEW Sethco FILTER PUMP
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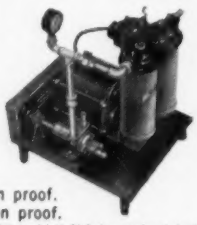

Model **CCGIE-120**—rated 1-3 gals. per min. for continuous filtration of solvents, lacquers, paints and all types of Product Finishing solutions.
FILTER ASSEMBLY: Double cartridge equipped with pressure gauge.
PUMP: Self-priming gear with relief valve set at 35 p.s.i.
MOTOR: ¼ H.P., explosion proof.
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PANEL: Bakelite, 14" x 16" x ½" thick; swivel ball bearing, rubber tire casters.
HOSE: two 10' lengths, solvent resistant, inlet strainer.
50' Electric Cable.
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range of 6 to 10 g.p.h. Exhaust volume is 1810 s.c.f.m., and oven exhaust temperature is 275 deg. F. Gas consumption is reduced to less than 200,000 b.t.u./hr. at 6 g.p.h. solvent load, and eliminated entirely above 11 g.p.h.

Since the outlet temperature from the R-C unit naturally increases with increased solvent concentration, best economy in providing for fume destruction and greatest opportunity for heat recovery exists when the oven is being operated at solvent loads approaching its specific maximum. Where solvent loads are consistently low, vent volume can normally be reduced to produce again the higher fume concentration.

As an air corrective device, the destruction performance of the R-C System is of great significance. A run was made for 60 minutes on an oven so equipped with a minimum of interruption in sheet feeding. It was estimated that the solvent load entering the oven was in the range of 8 to 9 g.p.h. An independent testing laboratory took a continuous sample of the gas on the discharge side of the catalyst bed during the 60 minute run, and measured the volume and temperature of the effluent. The subsequent laboratory analysis showed the following constituents remaining in the oxidized gases: **Total atmospheric contaminants** contained in 1960 s.c.f.m., 0.232 lb./hr.

Energy calculation, based on the volume through the catalyst and the indicated temperature rise, shows a heat release of 1,012,000 b.t.u./hr. in the catalyst bed. With an assumed

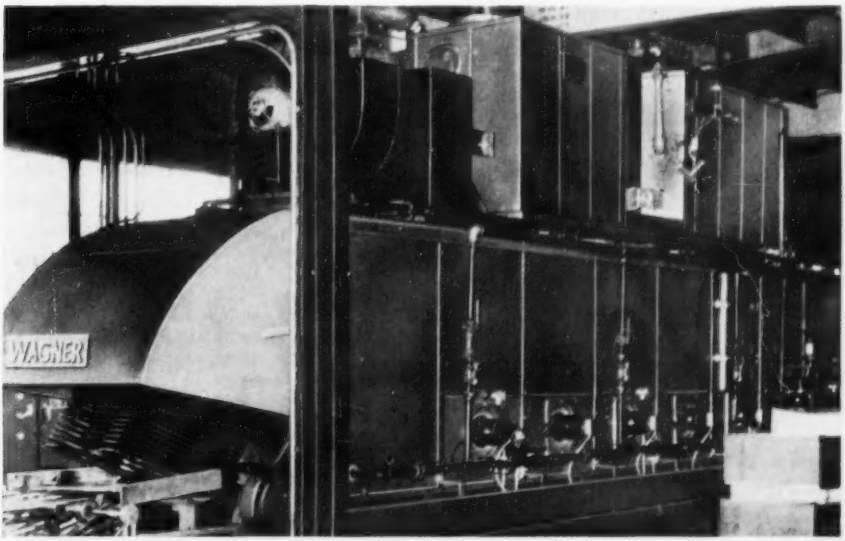

Fig. 3—Fume combustion unit installed on a metal lithographing oven in the plant of the Western Metal Decorating Co., Los Angeles, Calif. (Photos courtesy Catalytic Combustion Corp.)

average heat of combustion of 120,000 b.t.u./gal., the solvents consumed on the catalyst were 8.43 g.p.h. This conforms rather closely to the estimated solvents entering the oven. Combustion efficiency of the catalyst was calculated to be 99.3%.

In the above test, white vinyl roller coating was applied to the sheets. Essentially identical efficiencies were obtained on a second test with white alkyd coating. Laboratory tests and stack sampling were performed approximately 6 months after the system was placed in operation, during which time it is reported that there has been no service to the catalysts, or other portions of the fume combustion system.

From an observational standpoint, the gases were reported free of color, objectionable odors or eye irritants. For the duration of the tests, catalyst entry temperature was controlled at 625 deg. F. Where lower removal efficiencies are permissible, the control setting may be reduced, thereby reducing the fuel consumption.

Heat Recovery

It is well known that the method of operation, ventilation volume, solvent loads, and other influencing factors may vary from one plant to another, even on identical sheet bak-

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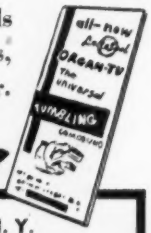

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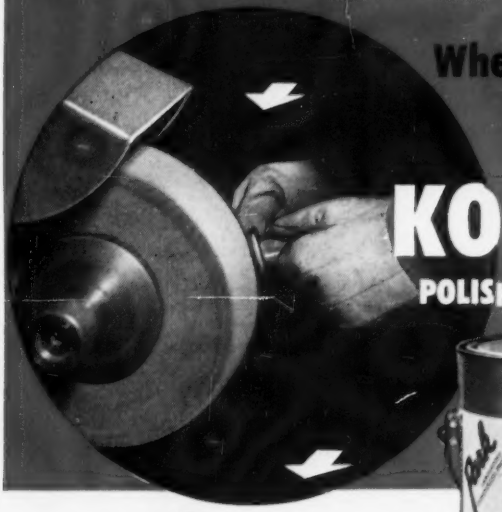

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LICENSED MANUFACTURER: Electric Resistance Furnace Co., Ltd., Wimbledon, Surrey, England

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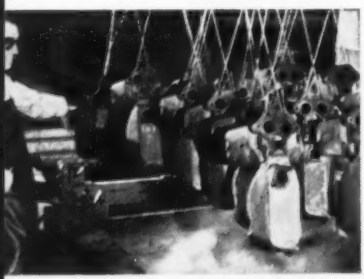

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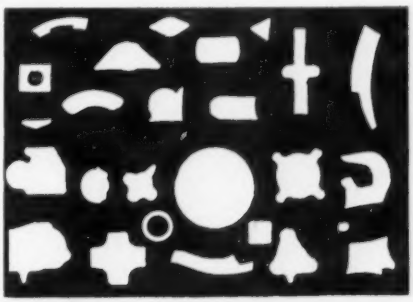
ing ovens. Further, since fuel costs vary from one locality to another, it becomes obvious that no all-inclusive statement can be made on the merits of employing heat recovery, or the speed with which investment on recovery equipment can be amortized by heat savings. The greatest opportunity for profitable recovery occurs in those ovens operating most consistently at solvent loads approaching the maximum. Under these conditions, if heat recovery is applied via the plant make-up air heating system the cost of the auxiliary equipment can be recovered in heat savings in the course of one heating season.

Return recovery to the oven heating system has been a subject of considerable study and debate. It has been generally concluded that where wicket preheaters are used, the oxidized gases from catalysis can be employed for this section of the oven. There appears little opportunity for economical return to the baking chamber for ovens now in service having internal heating arrangements. With some modifications, the externally heated ovens do offer convenient means for return of a portion of the heat generated, and should always be given consideration in those areas where local regulations demand corrective measures, in any event. As has been proven in other fields, greatest opportunity for heat recovery at minimum investment exists when consideration is given to catalyst employment during oven design stages, prior to construction. Such procedure gives the oven designer greatest latitude in furnishing a fully integrated baking, fume combustion and recovery process, and catalyst elements are available to oven manufacturers for this purpose.

Through the course of this discussion, reference has been made to fume concentrations which are well within the range of most existing coating ovens. The trend toward reduced ventilation for more economical oven operation is already well recognized. Through the use of catalytic sensing instruments, the resulting higher fume concentrations can now be handled with increased safety over past practices.

Adapted for publication in PRODUCTS FINISHING *from a paper presented at the National Metal Decorators Ass'n. Annual Convention.*



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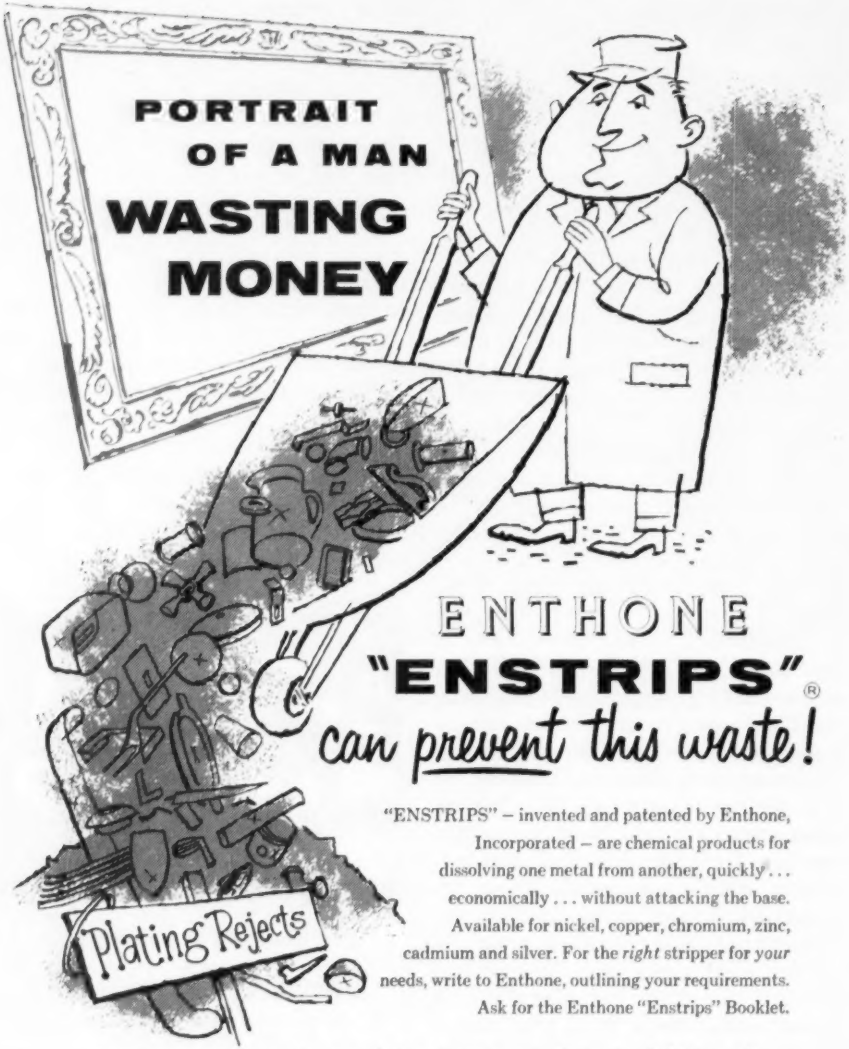
←———For more data on advertisement on opposite page circle 158 on Reader Service Card



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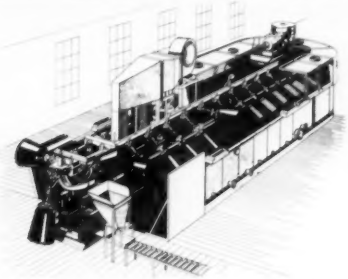
"FROM THE CASTING OR STAMPING TO THE FINAL FINISH"



STEVENS AUTOMATIC BARREL MACHINES

PAY BIG DIVIDENDS TO HUNDREDS OF COMPANIES IN THE PLATING AND PROCESSING OF SMALL PARTS

The list of owners of Stevens Automatic Barrel Machines reads like a page from "Who's Who" in American industry. Motorola, Chrysler, Westinghouse, General Motors, Ford, Illinois Tool Works, Maytag, I.B.M., National Cash Register and General Electric are but a few of the big companies aware of the economic and production advantages of Stevens Automatic Barrel Machines. Countless successful job shop operators are also big boosters.

The Stevens Automatic Barrel Machine provides for the complete metal finishing job in *one* machine. Where exceptionally high production is required, several machines can be used.

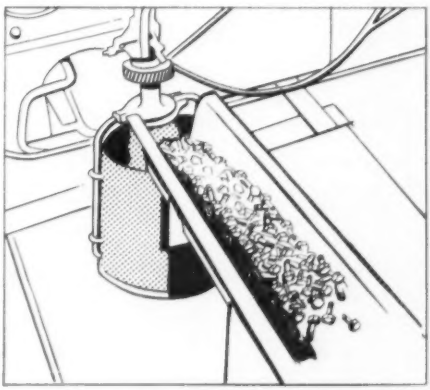
The Drying Unit Is Built In. No separate drying facilities are needed. The machine provides for a complete processing cycle of cleaning, acid, strike plating, rinses, bright dip as well as automatic drying and unloading.

The Machine Is Versatile. Plating time can easily be changed by simple adjustment of a control panel timer. Barrels can be adjusted to dwell or miss certain tanks in the cycle so that different types of work can be accomplished. And when necessary, the complete cycle can be changed by easy modification of the existing machine thereby eliminating costly new capital expenditures.

Dragout Is Reduced. The simple clean construction lines of the Stevens cylindrical barrel reduces carry out of solution far below that resulting from octagonal and older style cylinders featuring panel ribbed construction.

Parts Do Not Become Mixed. Since all parts remain in the plating barrel during the complete processing cycle, mixing of parts is entirely eliminated. Smaller capacity barrels make possible the processing of small emergency loads without the inconvenience of partitioned barrels and without penalizing production.

Machine Is Easily Installed. Most Stevens machines are shipped as one unit, mounted on skids for movement into your plant. Erection time and costs are greatly reduced. Furthermore, all machines are of a size that do not require inside factory alterations. When connections for electricity, steam, water, air, and ventilation are made the machine is ready to go.



Completely Automatic loading and unloading is possible with all Stevens Automatic Barrel Plating and Processing Machines. These are the only barrel machines on the market with this important feature.

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NO MATTER WHAT YOUR PLATING OR PROCESSING REQUIREMENTS ARE, THERE IS A STEVENS MACHINE TO DO THE JOB

Stevens Automatic Barrel Machines are now in use for copper, tin, cadmium, zinc and nickel plating. They are also used for cleaning, washing, phosphating, stripping, alroking, lubriting, and other types of immersion processing.

There are many operational advantages to be enjoyed in the use of Stevens Automatic Barrel Machines. Listed below are but a few.

MINIMUM LABOR REQUIRED – In most cases, one unskilled employee can operate the machine.

HANDLES THE COMPLETE CYCLE – Including cleaning, pickling, chromate treatments, plating, bright dip and is the only automatic barrel plating machine which includes drying.

COMPLETELY AUTOMATIC – No barrel lids to fasten and unfasten during automatic loading and unloading.

BETTER HANDLING – No mixing of parts. Becomes a part of a straight line production system. No partitioned barrels necessary for small loads.

NO HEALTH HAZARD – Occupational health hazards eliminated with ventilation of equipment.

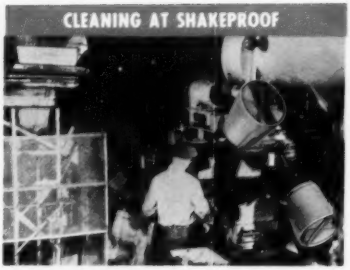
UNIFORMITY OF PLATE – Accurate plating cycles timed to meet your requirements.

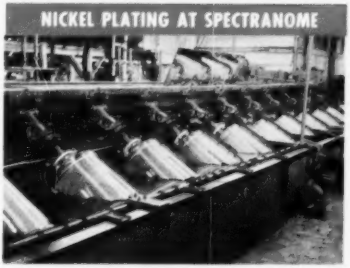
FITS ANY PLANT LOCATION – Does not need special buildings – can be moved at any time. Low head room.

DEPENDABLE – Scores of machines in use. Machine design and construction constantly improved.

LOW INITIAL COSTS – For average operation lowest initial machine costs.

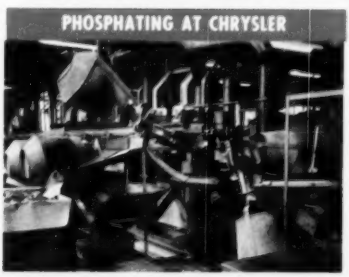
LOW MAINTENANCE COSTS – Proven over years of use and in varied operations.


CLEANING AT SHAKEPROOF


NICKEL PLATING AT SPECTRANOME

ZINC PLATING AT UNISTRUT

COPPER PLATING AT MOTOROLA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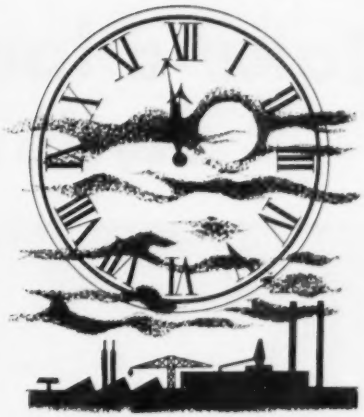

Fast action was called for. Through an oversight, one of America's leading pharmaceutical manufacturers was in trouble. His supply of extraction solvents—vital in vitamin processing was almost gone. 2000 gallons of solvents were needed by Saturday midnight. Otherwise, the production line would shut down, spoilage would result, men would be laid off, production schedules would be disrupted.

The time was Saturday afternoon.

The P. A. called the salesman. He'd gone fishing. But his home contacted the sales manager. The sales manager called the plant manager. "Meet me at the plant," he said. Together, they called a transport driver. Personally, they filled the transport and the order was delivered before dinner.

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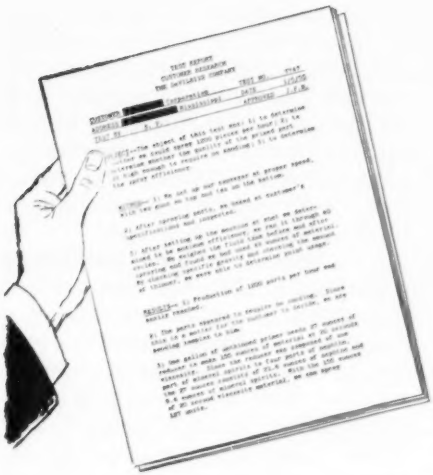

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Some Aspects of the European Finishing Industry

Questions and answers from an interview with H. C. Irvin following his recent tour of Europe

Question: We're familiar, of course, with the channels of distribution used in this country to move metal finishing equipment and supplies from the manufacturer to the user. Did you notice any apparent difference between European methods of distribution and our own?

Answer: To some extent, yes. I found no distributors, as we know them, who perform a re-sale function only. In most instances, re-selling is left mainly to so-called "Importers" or "Agents."

In order to avoid inter-country trade barriers, most large supply manufacturers of continental West Europe operate branch companies in other countries as subsidiaries. These subsidiaries are controlled by the parent company in a fashion somewhat similar to the branch office control exercised by U. S. manufacturers. The control, of course, is not as tight as you find here because each foreign subsidiary is staffed by people native to the country who are naturally familiar with their own markets and can best comply with the necessary regulations. I would say that the control is more in the nature of technical guidance, know-how, and recommendation rather than out-and-out direction.

Finances are indeed complicated with many rules and government regulations. Despite this, however, much inter-country business is carried on but from a strong proprietary point of view. There are also small independent manufacturing businesses within a given country who import and export metal finish-

ing supplies they do not manufacture. Included in their operations may be the manufacture of licensed formulations from raw material imported from the licensor of another country. Such procedure may be followed because of regulations as to methods of paying royalties and/or because of labor use regulations.

Question: What about the difference in the sales and service facilities offered by these European manufacturers?

Answer: I would say that, if anything, they have no salesmen. Their representatives are almost 100 per cent technical in nature. I was strongly impressed with the difference between what we know as selling and what they call selling. In Europe, the salesman is more of a technical consultant and pretty much waits to be called in by the customer. Now, that isn't necessarily true in all the countries. In Germany, for example, there is more selling as we know it. In Italy there appears to be a strong reliance placed on who you know, rather than the merits of your product. Generally, the European salesmen are service men rather than salesmen.

While on this general subject of selling, I was amused by the consistent reference to advertising by the use of the word "propaganda."* In some instances it was necessary to clarify the difference in meaning to be sure we were talking about the same thing.

*Editor's Comment: Perhaps this indication of European industrial thinking emphasizes one important reason why the United States leads the world in production and distribution.

H. C. Irvin is president of Allied Research Products, Inc., Baltimore manufacturer of the Iridite line of chromate conversion coatings and ARP plating chemicals. His recent trip included visits to England, Spain, Italy, Switzerland, Germany and France. While in these countries, Mr. Irvin conferred with manufacturers of equipment and supplies for the European metal finishing industry. Some of his observations are presented here.

Question: During your trip, did you learn of any new products or processes with which the American metalworking and metal finishing industry is not acquainted?

Answer: No. I was impressed that we are way ahead of the European countries in the metal finishing field.

Question: Can you cite a specific example?

Answer: In the field of chromate conversion finishes, most companies I visited were familiar with the treat-

ment of zinc and cadmium; however, the use seemed to be mainly for bright decorative purposes only. I saw little, if any, evidence of the use of the heavier type coatings for high corrosion protection or paint base. While the bright type coatings are produced by bleaching the yellowish coating, there apparently was just no consideration of using the yellow coating for increased protection.

Question: Can you make any comment as to the scope of thinking in regard to potential use of chromate conversion coatings on other metals?

Answer: Finishers are beginning to see wider use of this type of coating for zinc and cadmium. Aluminum treatment interest is quite high also. There is some current limited use, and a wide interest is generating in the use of chromate conversion coatings to replace anodizing. Generally speaking, I was impressed that this is due mainly to the widely publicized use of these coatings in the American aircraft industry. Now that the Germans can build aircraft they want to install equipment that is up to date.

This is a factor also in the automotive industry since more and more aluminum is being considered, as it is here in the states. Emphasis for the moment, however, is on trim.

Question: Did you see any of the colored coatings that would correspond to our dyed chemical conversion coatings or anodic treatments?

Answer: Yes, they use color anodizing over there, but I didn't see it

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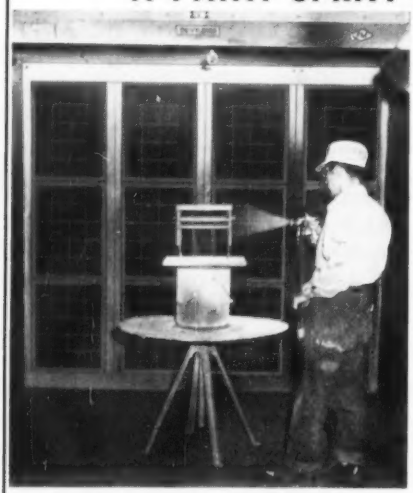

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to the degree to which it's used here. As far as the chromate coatings are concerned, I saw no evidence of the use of the dye colors for identification or decorative finishing.

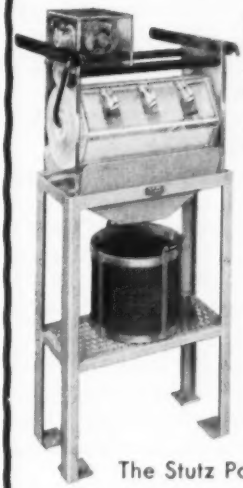
Question: You mentioned a while ago that most of the uses for chromate conversion coatings are for decorative finishing. Does that imply that there is no use of these finishes for a paint base or for heavy corrosion protection?

Answer: That's right. I was not impressed at all that there was any appreciable use of chromates for paint base or corrosion resistance. Most of the chromates that are used are of the bright type. These are gaining some acceptance for applications for which chrome plate was previously specified.

I am impressed that there seem to be extremes in finishing — nothing, or something inadequate, up to the epitome of chrome plating. For instance, when they chrome plate, maximum thicknesses are used in lieu of some consideration of end use requirements. Many suppliers tell me that chrome plate is used in many places where the more economical chemical conversion coatings could be used to achieve the same result. Also, because of the expense of chrome plate, many parts go unfinished. These would be finished, if the art of chemical conversion finish was more widely known.

Question: What about the use of bright chromate coatings on zinc die castings? Did you see anything to compare with the coatings that are available in this country for producing a bright chromate conversion

STUTZ



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coating directly on the casting?

Answer: Absolutely not. There was terrific interest and enthusiasm in the fact that an American producer has such a process. And they were equally interested in its use as a chemical polishing treatment to save the cost of mechanical buffing prior to electroplating.

Question: The status of the European toy industry is well known throughout America. Did American developments in the field of decorative chromate coatings strike any interest as far as their toy industry is concerned?

Answer: As far as I could tell, most of the toys are painted. It's difficult to tell what kind of a preparation is used prior to painting. I was impressed with the limited use of finishes for toys. However, I will say that the suppliers with whom I talked were actively interested in the possibilities of the chemical finishes because of their economy of cost and simplicity of operation. More exchange of ideas on end use will result in wider use of these coatings in years to come.

Question: Generally, how do you think the status of European metal finishing compares with ours?

Answer: I think that we're ahead in metal finishing in general. I believe that we have more innovations in electroplating than they have. I'm impressed that where companies are growing in the metal finishing supply field, they are looking to the U. S. for products and ideas. They just

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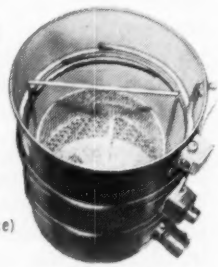

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don't have the money to spend on research and development that our companies do. And quite important, there have been tremendous losses from the ravages of war and untiring efforts are being made to catch up the losses of time and property.

Question: In closing, can you make any general comments that you feel might be of interest to men in the metal finishing industry in the U. S.?

Answer: To begin with, European proprietary compounds are behind those in this country insofar as quality and variety are concerned. We seem to be ahead of them in research and development and, as a result, have more products for far more purposes. I had a firsthand look at some of the ravages of war which made me think twice about our good fortune. To see companies that had to start from absolute scratch once more was impressive. I must compliment them on their progress.

I think there is a good foreign market for products in the advanced art of metal finishing. The more working relations we have over there, the greater the possibilities for cementing diplomatic relations.

I saw a lot of Europe by driving through it. By associating with business people, I had an opportunity to get some reactions as to life there. One thing that impresses me and concerns me greatly, is that a divided Germany presents a most serious problem. Those people want to be reunited and anyone can see why. Going from West Berlin into East Berlin was like going from Times Square into a graveyard.

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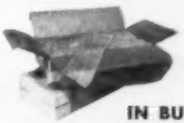

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THIS is a Metal Cleaning

. . . it is part of

. . . the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

At the Left is a Partial View of Maytag's Plant No. 1. The Mahon Self-Housed Finishing System installed on the Roof in 1939 is clearly visible. Over a Dozen other Mahon Installations—including Two More Complete Finishing Systems—are Today in Operation in Maytag Plants No. 1 and No. 2 in Newton, Iowa.

M

and Rust Proofing Machine

a Complete Mahon Self-Housed Finishing System Installed in 1939 on the Roof of Maytag's Plant No. 1

Conventional Wringer Washer Produced by Maytag in 1939.

The Famous Maytag Wringer Washer in Production Today.

. . . over 5,000,000 MAYTAG Conventional WRINGER WASHERS have PASSED THROUGH THIS FINISHING SYSTEM . . . and It is STILL in DAILY USE!

When you hear this statement: "Mahon equipment is engineered better and built better for more economical operation over a longer period of time", it is no idle boast. There are dozens of Mahon Finishing Systems in various industries throughout the country with performance records comparable to this one at Maytag. When you make a capital investment in equipment which so directly affects your production costs and the appearance and saleability of your product, your primary concern should be end results—quality of finish produced, operating efficiency, flexibility of equipment to handle future production loads and model changes, and yearly maintenance requirements—these are the all-important considerations. The lowest price tag doesn't tell the whole story . . . so, if you want good finishing equipment—a system that has been properly planned, thoroughly engineered and coordinated to do a good finishing job, remember that you can only buy Mahon experience, Mahon engineering and Mahon quality equipment from Mahon. It may cost a little more, but Mahon customers will tell you that "It's the best investment you can make". See Sweet's Plant Engineering File for typical Mahon installations, or write for Mahon Catalog A-657.

THE R. C. MAHON COMPANY • Detroit 34, Mich. • New York 17, N. Y. • Chicago 4, Ill.

Engineers and Manufacturers of Metal Cleaning and Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Spray Booths, Flow Coaters and Dip Coaters, Drying and Baking Ovens, and Complete Conveyorized Finishing Systems.

MAHON

Techniques for Surface Treatment of Aluminum

By HENRY WALKER
Consultant

THE PROPERTIES OF ANODIC FILMS on aluminum are fairly well known. They are thin, fairly transparent layers of hard aluminum oxide which are strongly adherent and afford considerable protection against chemical and other forms of attack on the underlying metal. The kind of film deposited governs the degree of protection afforded. Proper preparation and treatment make possible excellent protection as well as beautiful surface effects—useful for industrial and decorative uses.

In recent years, many new developments in the field of metal preparation prior to anodizing have been developed. More efficient cleaning methods have appeared, and advances have been made in electrolytic and chemical polishing, the latter in an effort to eliminate mechanical polishing or buffing.

Many inventors in Europe have recently contributed novel improvements to this art. They have shown that when the proper chemical or electrolytic process is used (depending also on the alloy, and the surface condition of the aluminum) a mirror-bright surface on aluminum can be obtained.

Electrolytic Polishing

The two classical processes which are well known, Alzak and Brytal, are still widely used. Both require a high purity aluminum surface. The Brytal* bath composition is 15 per cent sodium carbonate and 5 per cent sodium ortho-phosphate. Recently it has been modified by using 30 per cent sodium carbonate and 6.5 per cent trisodium phosphate at a temperature of 199 to 235 deg. F. The material is first pickled in the bath for about 20 seconds. A current of from 30 to 50 a.s.f. (10 to 15 volts) is then turned on for 6 to 10 minutes. After this treatment a phosphoric-chromic type acid bath may be used to smooth surface blemishes. Typical baths are:

* Patents held by Aluminum Company of America.

1. Phosphoric acid .....200 g./1.
   (density 1.7)
   Chromic acid .....200 g./1.
   2-5 minutes immersion at the boiling point.
2. Sulfuric acid .....164 g./1.
   Phosphoric acid .....104 g./1.
   Chromic acid .....200 g./1.
   2-5 minutes immersion time; temperature, 158-176 deg. F.

This is followed by anodizing in 25 per cent sodium bisulfite for 10 to 15 minutes at a current density of 6 to 8 a.s.f. The product is then rinsed, dyed and sealed.

Excellent results have been obtained in electrolytic polishing in a base containing fluoboric acid and a small amount of fluoride to improve conductivity. Another similar typical bath is a 5 per cent chromic acid solution operated at 22 volts for about 10 minutes. A small amount of fluoboric acid is added.

Jacquet, in France, developed a mixture of perchloric and anhydrous acetic acid, from which he obtained beautiful, mirror-like surfaces. There is considerable danger involved in mixing and using the solution.

Chemical Polishing

In the last few years chemical polishing without electricity has been used widely. This involves a simple immersion of the article in the proper solution. The acid attacks the elevated parts of the surface of the metal and smooths them without disturbing the crystal structure. Mixtures consisting of acids such as sulfuric-phosphoric-chromic, phosphoric-nitric, acetic-phosphoric-nitric and hydrofluoric-boric with various metallic salts are sometimes added. In France, the Alupol process is widely employed. The bath consists of:

Sodium hydroxide ....300-500 g.
Sodium nitrate .....300-500 g.
Sodium nitrate .....200-400 g.
Nickel sulfate ..... 1-5 g.
Sodium phosphate ....100-300 g.
Water .....100-300 g.

This solution works very rapidly, giving a bright polish. The luster obtained in most cases with this bath is adequate, but if a greater luster

"This is the first time I've been out of the office building. Is this where all the company's employees take their baths?"

is required, a second polishing bath (Alupol II-electrical) is used. This contains about 70 per cent phosphoric acid, 20 per cent acetic acid, and 10 per cent nitric acid, and is used to modify the effect given by Alupol I and yield a higher luster. Various metal salts are added to decelerate the reaction and to reduce the effervescence of the bath.

Further attempts have been made to modify the second bath by adding water and sulfuric acid, and at the same time by reducing the phosphoric acid content. This extends the solution life, and reduces the rate of dissolving and may be used if the time factor is not too critical.

In Germany, the Erftwerk Process is most generally used for polishing aluminum. The bath is an aqueous solution of ammonium bifluoride with nitric acid, used at 122 to 176 deg. F. with an immersion time of up to 30 seconds.

In Italy, the Instituto Sperimentali dei Metalli Leggeri has recently developed a bright-dip process called Alubal, which is an improvement over the French Alupol process. This consists of adding sulfuric acid to Alupol II. They have also modified the Alupol I by adding cadmium acetate. Although a longer

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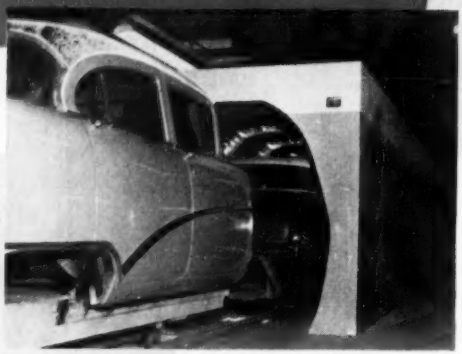

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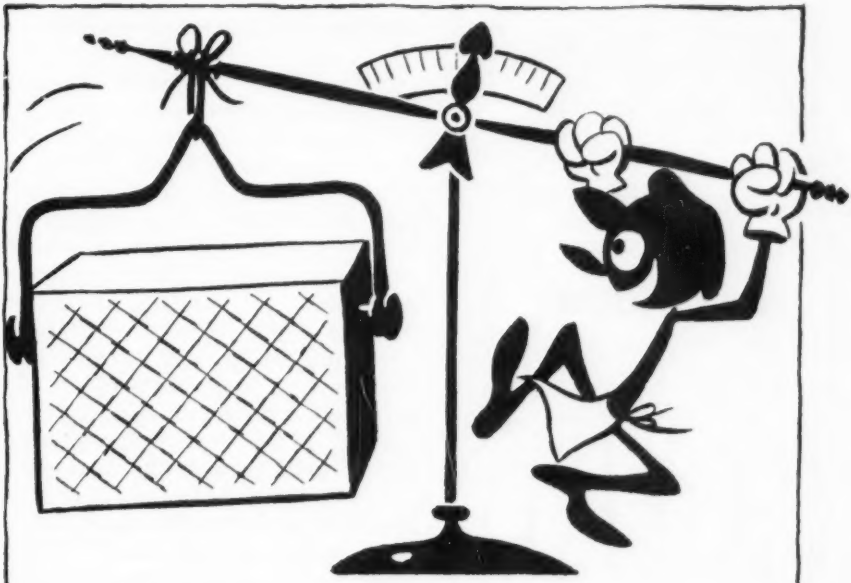


Pickling Pete Sure as fate Picks Monel For lighter weight

What makes Monel lighter? High strength (thin sections handle big loads) plus Monel's acid resistance (less corrosion allowance). Easy-to-repair Monel gives long life, too. Free booklet, "5-Way Savings in Pickling," is worth writing for today.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

INCO TRADE MARK **Monel** Pickling Equipment

For more data circle **170** on Reader Service Card

time interval is necessary, since the solution is weaker, it ultimately results in a smoother finish.

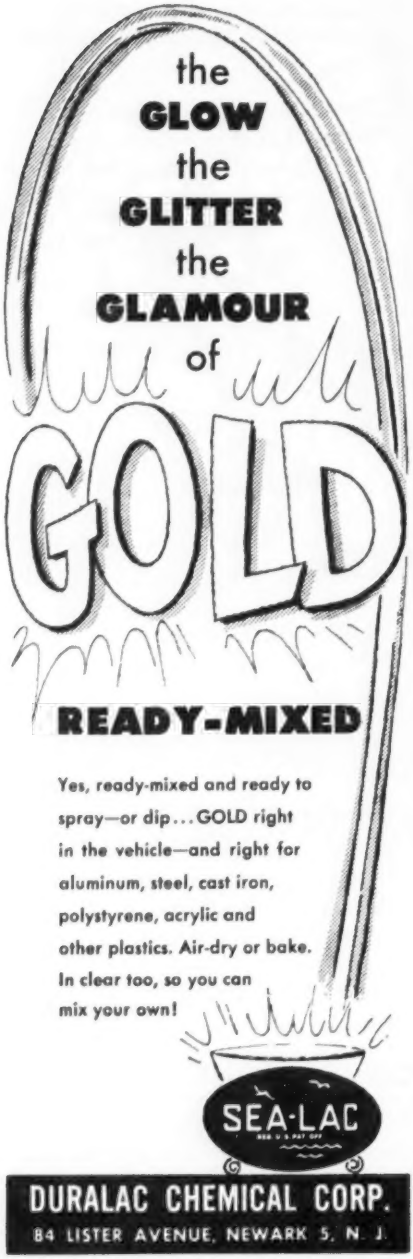
United Anodising Ltd. of England has a patent on a solution of two parts phosphoric acid and one part sulfuric acid. The temperature varies from 176 to 257 deg. F., and the time of immersion is 1 to 10 minutes. Another process involves the mixing of 65 to 85 parts (65 to 83 preferred) phosphoric acid, 1 to 10 parts (2 to 5 preferred) nitric acid, and 11 to 28 parts (14 to 23 preferred) water. It may be used at a temperature of 158 to 262 deg. F. for a time interval of 15 seconds to 5 minutes. Better results are obtained when the bath is agitated. A certain percentage of other acids such as acetic can be added to vary the rate of reaction.

A composition disclosed in German Patent 812494 is:

Phosphoric acid	40-90 c.c. (preferred 65-90 c.c.)
Nitric acid	0-50 c.c. (preferred 0-35 c.c.)
Water	2-40 c.c. (preferred 2-35 c.c.)

Time: 20 seconds to 3 minutes.
Temperature: 181-233 deg. F.

It must be stressed that the formulation of the bath depends on the alloy being treated. If maximum reflectance is desired, a purer aluminum is required. After treatment in the polishing bath, the luster may alter in many ways in the anodizing bath. This again depends on the alloy being treated and the surface condition of the products.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the
GLITTER
the
GLAMOUR
of
GOLD
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Yes, ready-mixed and ready to spray—or dip...GOLD right in the vehicle—and right for aluminum, steel, cast iron, polystyrene, acrylic and other plastics. Air-dry or bake. In clear too, so you can mix your own!
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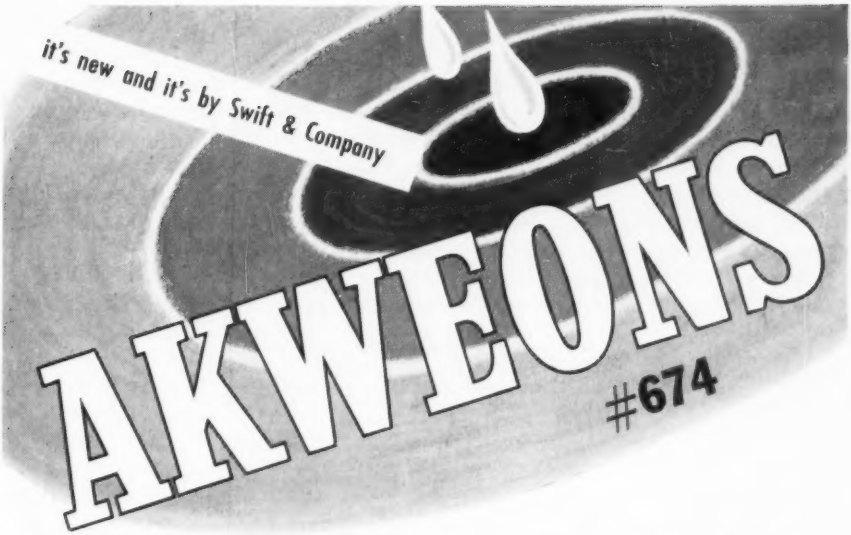

Pickled without AKWEONS

Pickled with AKWEONS

Here are the important features of AKWEONS #674:

- Rust preventive properties
- Helps retard corrosion
- Fume depressant
- Helps minimize loss of base metal to acid attack
- Can be used in small quantities
- Saves acid (according to users)
- Soluble in acid, alkaline or neutral solutions

Swift
101 ST YEAR

To Serve Your Industry Better

...an outstanding acid additive and fume depressant!

AKWEONS #674 is a new wetting agent and emulsifier developed for use in sulphuric, hydrochloric or phosphoric acid baths. While the basic purpose of AKWEONS #674 is to retard attack by the acid on the parent metal without affecting the acid's action on surface impurities, it also exhibits excellent fume depressant and rust preventive properties. The overall results are a great reduction in fuming, substantial acid savings and less weight loss in the metal.

There is only one way to find out what AKWEONS #674 can do for you and that's by a trial in your own plant. Use the coupon below to get full information on the special introductory trial offer. It's easy and inexpensive and we believe you'll find that . . .

ONE TRIAL IS BETTER THAN A THOUSAND CLAIMS

RETURN THE COUPON

For information on a trial order. There is no obligation — except that AKWEONS #674 be used as directed to insure optimum results.

SWIFT & COMPANY, Industrial Oil Dept.
1832 165th St., Hammond, Indiana

Please send further information on a trial order of AKWEONS #674.

Name .....

Company .....

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City ..... Zone ... State .....

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Anodizing

The porous condition of the anodic film depends upon the method of anodizing. Makeup of the solution, kind of acid used, current density, time of electrolytic contact, and temperature are the variable factors.

It has been proved by microscopy that the bath temperature will affect the porosity of the metal surface coat: the cooler the bath the less porosity. The porosity caused by anodizing is dependent upon temperature and speed of the reaction. The pores are formed by the anodizing and dissolving processes, both taking place at the same time.

Another important factor that influences porosity of the film is time. The longer the article is immersed in the electrolyte, the greater will be the porosity. For example, a film of the same thickness obtained from the same bath at the same temperature (prepared using a low current density with longer time, will have more porosity than one in which a high current density is used.

The current density affects depth of the pores. Pore formation is also a function of the dissolving action of the electrolyte and depends on temperature and concentration of the acids. When a 20 per

Check and Compare!

NO OTHER LINE OF BARREL FINISHING EQUIPMENT OFFERS SO MANY EXTRA FEATURES

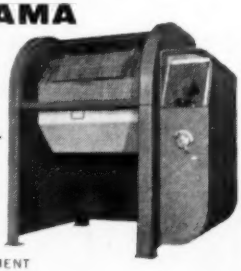
Take a minute . . . check SPEED-D-BURR *extra* features against your present finishing equipment—or compare with equipment you plan to install. No question about it . . . the total equals *more* dollar value when you buy—SPEED-D-BURR!!

36" x 32" BARREL UNIT

STANDARD EQUIPMENT	SPEED-D-BURR	60.A	60.B	60.C	60.D
BARREL CAPACITY (Nearest comparable unit)	16.8	13.0	13.0	14.3 (Actual)	13.0
BARRELS (Rubber or Neoprene Lined)	Yes	Yes	Yes	Yes	Yes
HINGED BARREL DOOR (Speeds open and close time 90%)	Yes	No	No	No	No
QUICK ACTING CAM LOCKS (Opened without tools)	Yes	Yes	Yes	Yes	No
MODERN, STREAMLINED CABINET	Yes	Yes	Yes	No	No
CABINET PANELS Extra heavy gauge steel integral part of supporting member (not light sheet metal wrapper)	Yes	No	No	No	No
COLOR ENGINEERED CABINET (For safe and fatigueless operation)	Yes	No	No	No	No
MOTOR SIDEMOUNTED AND COVERED FOR PROTECTION	Yes	No	Yes	No	No
VARI-SPEED MOTOR	Yes	No	No	No	No
LOW VOLTAGE CONTROLS RECESSED AND SIDE MOUNTED FOR SAFETY	Yes	No	Yes	No	No
PRESET STOP AND START TIMER	Yes	No	No	No	No
DIRECT READING TACHOMETER	Yes	No	Yes	No	No
POSITIVE STATIC BRAKE	Yes	No	No	No	No

TOTAL—*More dollar value* with SPEED-D-BURR!

THE FUTURAMA SERIES
Custom Styled for MODERN INDUSTRY



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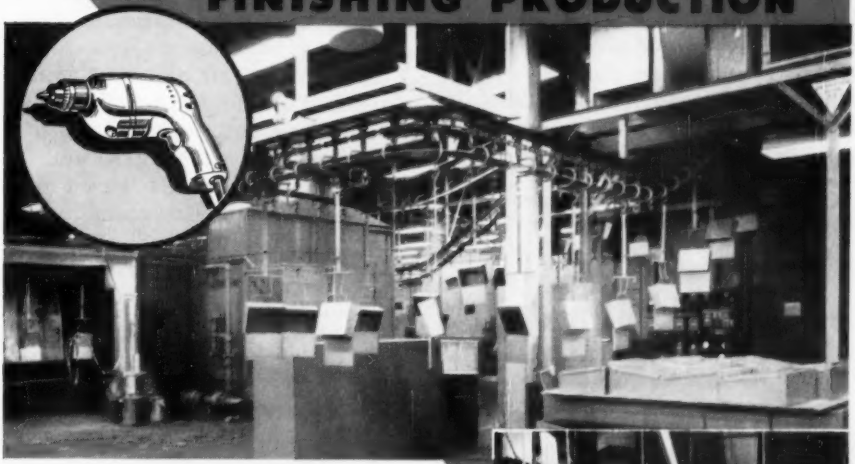
BLACK & DECKER IMPROVES FINISHING PRODUCTION



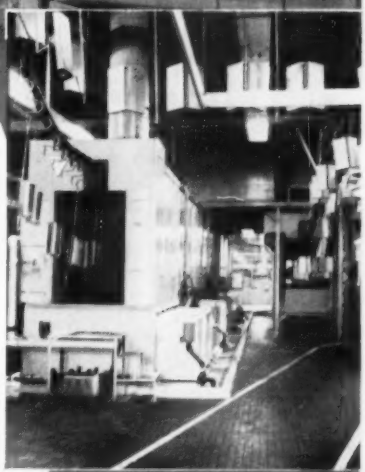
with DESPATCH System

Higher production schedules for finishing power tool parts and accessories was the objective of this internationally known manufacturer. By utilizing all space on the floor and above the floor for material transporting and processing, production capacity was doubled in the finish department.

Designers • Builders • Installers

Despatch engineers will help from the first to last stages to provide the finishing system that you need to be competitive. We can tell you of hundreds of plants in every area that have proven the competence of Despatch technicians and the benefits that Despatch engineered finishing systems have provided their production.

For more information on how we can serve your plant, write **Dept. C**



Top View: Spray booth adjoining an arrangement of over-hung finish baking ovens with feeder conveyor line.

Bottom View: Multi-stage washer and dry-off oven, conveyor supplies completely treated parts to spray booth.

DESPATCH OVEN COMPANY

Minneapolis Office: 619 S. E. 8th St.
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PIONEERS IN ENGINEERING HEAT APPLICATIONS FOR INDUSTRY

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cent sulfuric acid solution is used in conjunction with fluoboric acid, a higher porosity will result than without the fluoboric acid. When aluminum sulfate is added to the sulfuric acid solution, the dissolving power diminishes.* The porosity of the surface is also a function of the alloy used. Aluminum containing copper will have more porosity than an aluminum alloy containing magnesium or pure aluminum.

Another factor of some importance is the degree of air agitation which is used. This helps to maintain a more uniform bath temperature, giving a more uniform composition.

The main difference between normal and hard anodizing lies in the fact that hard anodizing* is performed at a considerably higher current density and a lower temperature than normal anodizing.

A hard anodized surface will scratch window glass and often reaches 1000 Vickers Numbers in hardness. Breakdown is generally caused by disintegration of the oxide layer brought about by excessive frictional heat. As the film is a good thermal insulator, the heat is not rapidly dispersed. No wear has been ob-

* Other salts and gases will accomplish the same result.

*Patented process of Aluminum Company of America.

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CORROSION-PROOF FLOOR SURFACING

PROVIDES GREATER PROTECTION AGAINST ACIDS AND ALKALIES

We will send you a sample to prove that COROCRETE will give you greater protection . . . save you dollars . . . and last longer.

COROCRETE is 4 times stronger than concrete . . . is resistant to impact and abrasion . . . provides guaranteed protection against acids, alkalies and solvents . . . sets up faster . . . and can be applied quickly and easily.

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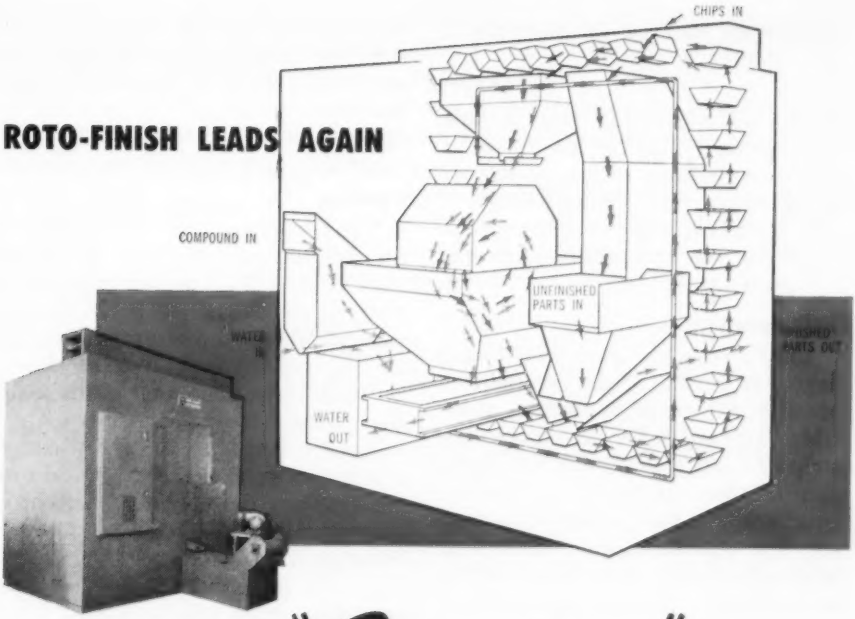
ROTO-FINISH LEADS AGAIN



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- Completely Automatic
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- Loads and unloads itself with each cycle.
- Cycle variable for different part requirements.
- Provides continuous operation
- Assures uniformity of finish
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- Complete package unit
- Simple to install . . . Electric, water, air and drain connections only.
- Suitable for straight line production.
- Thus, "Rotomation" barrel finishing machine becomes a machine tool.

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ORIGINATORS OF THE ROTO-FINISH PROCESS

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served when rubbing with a steel surface under a load of 250 lb./sq. in. at 5 ft./sec. Gears with hard surface film were also used for hardness tests, with provision being made to remove frictional heat by a sufficient flow of lubricant.

Soft Anodizing

This method is used to obtain a degree of flexibility and bending not possible with hard or normal anodizing. To reduce the cost of coating strip or wire, this type of anodizing can be set up for a continuous length with a fully automatic process. For reasons of cost, as well as to give flexibility, a chloride is added to the bath, which is used with a high current density and high voltage. This anodizing method may require only 30 seconds to 1 minute and the coating will have a thickness of about 15 microns. The coating will be soft and will bend easily.

Sealing

The porous oxide film produced on an aluminum surface by anodizing may be sealed by immersion in hot water at 180 to 212 deg. F. This treatment converts the aluminum oxide to the monohydrate with a consequent increase in volume. This seals the pores of the film effectively.

Anodic coatings may be sealed by treatment in a solution of sodium chromate or dichromate. The chromate is absorbed in the coating and adds to its protective value. A sodium silicate solution may also be used for sealing anodic films.

Solutions of nickel or cobalt acetate (1 to 2 per cent) are used to seal porous films which have been treated with organic dies. These materials tend to set the dye and also seal the pores of the anodic film.

Enamel Anodizing

Enamel anodizing is done in an electrolytic bath based on titanium oxalate or zinc and magnesium chromates. The latest improvements are based on the precipitation of ferric hydroxide in the porous anodic film. This is done by dipping the freshly prepared anodic film in ferric ammonium oxalate, and then in a pyrogallic acid solution.

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If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

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We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

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Cleveland, Ohio

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For further information on any product mentioned in this issue use READER SERVICE CARDS inside front cover.

RANSBURG *Electro-Spray* DOES IT BETTER... FOR LESS

Look what Ransburg Electrostatic Spray painting is doing in this eastern job shop, the Del-Val Finishers Division of J. W. Rex Company, Lansdale, Pa.

As a job shop, Del-Val handles a variety of work each month, painting hundreds of thousands of pieces and parts of various sizes and shapes.

The versatility and flexibility of Ransburg Electro-Spray makes it ideal for their varied painting requirements. Here's a typical example. Del-Val recently completed a contract for a Philadelphia manufacturer of barbecue trays with these results:

50% INCREASE IN PRODUCTION

50% SAVINGS IN LABOR and OVERHEAD

66% CUT IN PAINT COSTS, with improved, more uniform, and higher quality finish.

The job—flat sheet steel, 11" x 19"—enamel coated to withstand a 90 bend with sharp radius. Full coat one side; mist coat other

WITH RANSBURG ELECTRO-SPRAY		BY FORMER HAND SPRAY	
Output, 375 panels per hour with 3 men		Output, 250 panels per hour with 4 men	
	per panel		per panel
Labor and overhead	.06	Labor and overhead	.12
Paint & lease cost	.017	Paint cost	.044
TOTAL COST	.077	TOTAL COST	.164

Want to know what Ransburg Electro-Spray can do for you in YOUR finishing department? Write for our new No. 2 Process brochure. It tells the WHAT & HOW of electrostatic spray painting, and with numerous production-line examples, shows how other manufacturers are cutting finishing costs... increasing production, and improving the quality of their work with Ransburg equipment. Too, we have available now a new movie, "The Big Attraction," a 27-minute sound and color film on electrostatic spray painting.

Ransburg ELECTRO-COATING CORP.
Indianapolis 7, Indiana

RANSBURG

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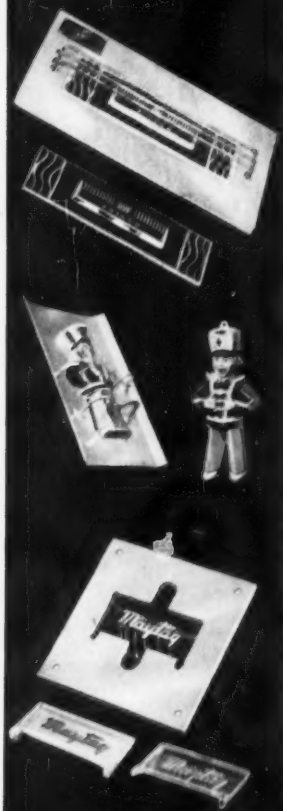
FIORE

MASKS FOR PRECISION PAINTING



Fiore Spray Masks are used on plastics, stampings and die-castings that have depressed or raised detail and on any other irregular shaped surface. If a product can be molded, stamped or die-cast, it can be decorated by Fiore spray masks.

Over ten years many manufacturers have been decorating their products by using Fiore spray-masks, associated jigs, fixtures and spray machines. Fiore Spray Masks and accessories are simple to use. An unskilled worker can operate them without special training and obtain perfect duplication and greater speed at a minimum cost.

Send for your free copy of our 20 page book. Or, send your samples and drawings for consultation and estimates.

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Sylvania offers you a wide selection of ready-made tungsten coils, in single or multiple strand, each intended for a particular vacuum metallizing application. Whenever you encounter coil application problems, our engineers will gladly help you work them out.

Write for your copy of "*New Process Sylvania Tungsten Coils and Strand*," presenting application and performance data.

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Spotlighting Finishing Progress..

Fig. 1—Intricate fluting on this rocket engine block was produced by means of the versatile Chem-Mill process.

Metal Milling by a Chemical Etch

Dr. C. Fred Gurnham
Head, Dept. of Chemical Engineering
Michigan State Univ.

The production of formed metal sheets of variable thickness has been a problem in the aircraft industry and in related fields. Such sheets are desirable in modern airplane design because the thin sections result in a saving in weight while the thick sections, properly designed into stiffening and reinforcing ribs, impart necessary rigidity and strength to the completed panel.

The thick areas of sheets and panels not only provide stiffness, but may also be used to strengthen points of

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major stress. Thus at bolt-holes or in spots that are to be welded or joined to other structures, an increased thickness is desirable. The resulting pattern of thin and thick sections may become exceedingly complex, even on a simple flat sheet without curvature.

Until the development of chemical etching, the manufacturer of integrally stiffened panels had to resort to mechanical milling operations. This was a difficult task on sheets that had been formed into simple or compound curves. On the other hand, sheets milled to the desired thickness before forming were extremely difficult to shape and bend evenly and without wrinkles or non-smooth areas.

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The Chem-Mill Process

The difficulties of preparing variegated patterns of thickness (Fig. 1) by mechanical operations can be overcome by using a chemical etching process. Such a technique is not new, but recent refinements in the process now make it adaptable to the large pieces used in aircraft construction. Earlier applications were to smaller parts such as bearings and instrument pointers.

United States Patent No. 2,739,-047, granted during 1956 to M. C. Sanz and assigned to North American Aviation, Inc. (Los Angeles), describes some of these improvements in detail. Further progress is being made however, on a full production scale, in pilot plants for studying different metals, and in the laboratory. Turco Products, Inc., also of Los Angeles, is the prime licensee of this process, and has sublicensed more than 30 other firms to utilize the chemical milling techniques on a commercial scale. "Chemical Week" has described the process (May 26, 1956, page 60; and June 9, 1956, page 52), pointing out its merits and future possibilities as well as some of the remaining problems.

Theory

The theory of chemical milling is simple enough: a chemical etching agent is allowed to act on the metal sheet until the desired quantity of metal has been dissolved. Areas which are not to be decreased in thickness are protected from the etching chemical by masking.

The principal variables that govern the rate and amount of material removal are: nature of the metal, composition of the etching solution,

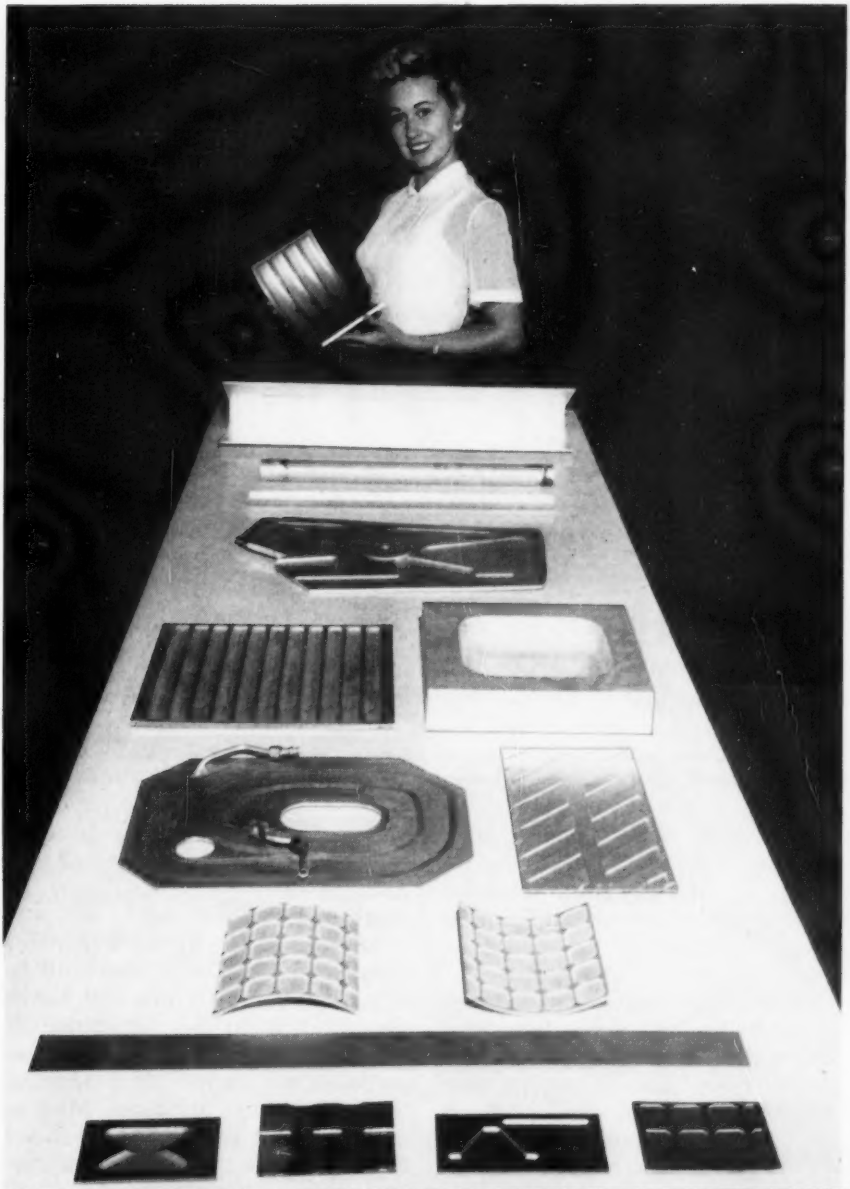

Fig. 2—These typical aircraft and missile parts are produced by chemical milling.

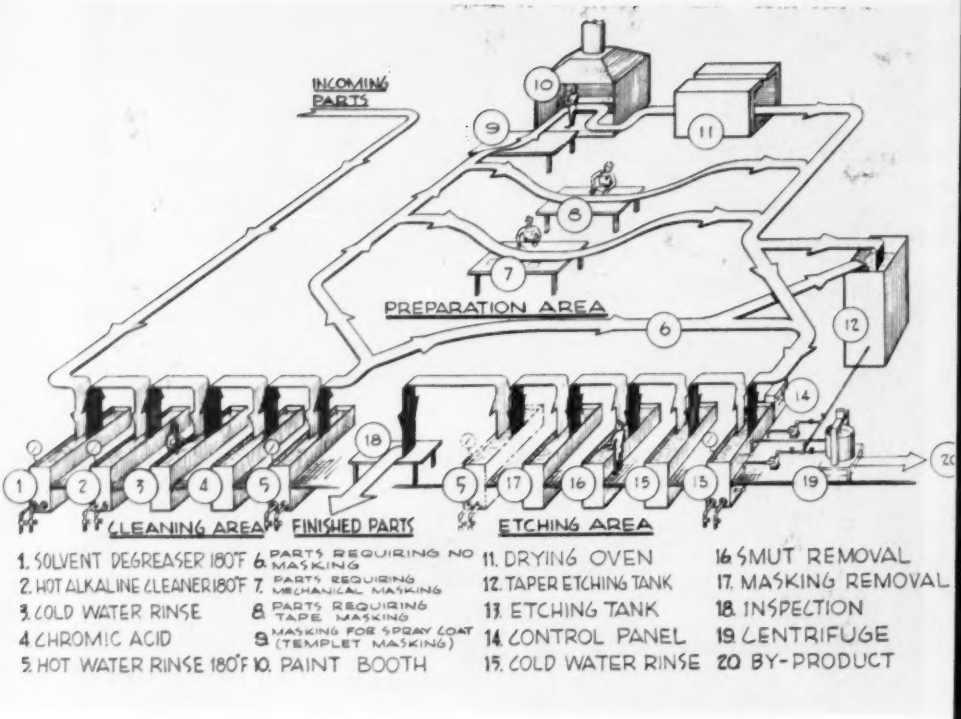

Fig. 3—Diagram of typical layout for a chemical milling installation. Modifications of this particular installation would be made to allow for the handling of specific types of work.

concentration of the solution, temperature, and time. All of these are subject to rigorous control by the designer and operator, and can be regulated to produce the results desired for a specific application.

Tapered sections can be produced by gradually immersing the metal part in the solution, or by gradually removing it. This utilizes the time variable to control the depth of "cut." Fillets or rounded inner edges of the cuts result naturally from undercutting of the masking; this is controllable to some degree, and produces a part of superior strength compared to a sharply notched mechanical cut.

Materials

The principal application of chemical milling, or "Chem-Mill" as it is identified by Turco and North American, is in the fabrication of aluminum sheet. This material is essential in the production of commercial and military airplanes. Most of the large scale applications of chemical milling are in the aircraft industry (Fig. 2).

At least two large pilot plants are

currently in operation on steel, magnesium, and titanium parts. These metals are more difficult to machine than aluminum, by either mechanical or chemical means. The pilot plants are large enough to be producing usable parts, while still serving their primary purpose of increasing know-how in this work.

Composition of the etching solutions is not stated in the patent disclosure or other literature, except that caustic alkali solution is cited as an example for etching aluminum. A large number of possible etching acids and other chemicals exists, and the sponsors feel that this choice, like the choice of temperature and time, is a variable that can be individually selected for each application in order to achieve the best control and optimum results.

Operation

The metal sheets, prior to chemical milling, are subjected to all of the desired mechanical forming operations such as stamping, rolling, and bending. Thorough cleaning is then necessary, so that the etching will be uniform. The technique of cleaning, of course, varies with the type of metal being processed, and is similar to the cleaning sequences used preparatory to electroplating, anodizing, and similar familiar processes. In the particular flowsheet shown (Fig. 3), cleaning is provided by a solvent degreaser at 180 deg. F., a hot alkali cleaner, cold water rinse, chromic-sulfuric acid dip, and hot water rinse.

Masking of some portions of the metal surface (Fig. 4) is commonly desired, in order to provide a patterned etch. Vinyl films are commonly used for this purpose, although numerous other etch-proof materials can be used equally well. Masking can be applied by taping, by painting over broad surfaces, or by spray coating with a templet. Certain of

Fig. 4—Hand-stripping the masking film from the areas of a part that are to be chemically milled. Each area to be stripped is knife-scribed around a template, as shown.

Fig. 5—Parts being lowered into a caustic etching solution for chemical milling. Note masking film and cutouts. Edges need no masking when parts will be cut from sheet after etching.

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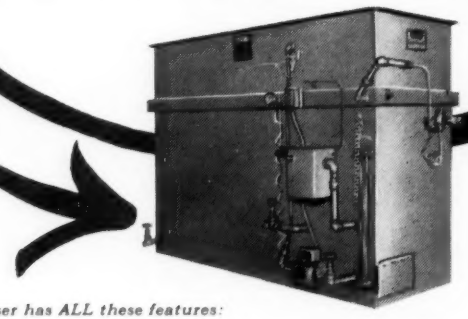

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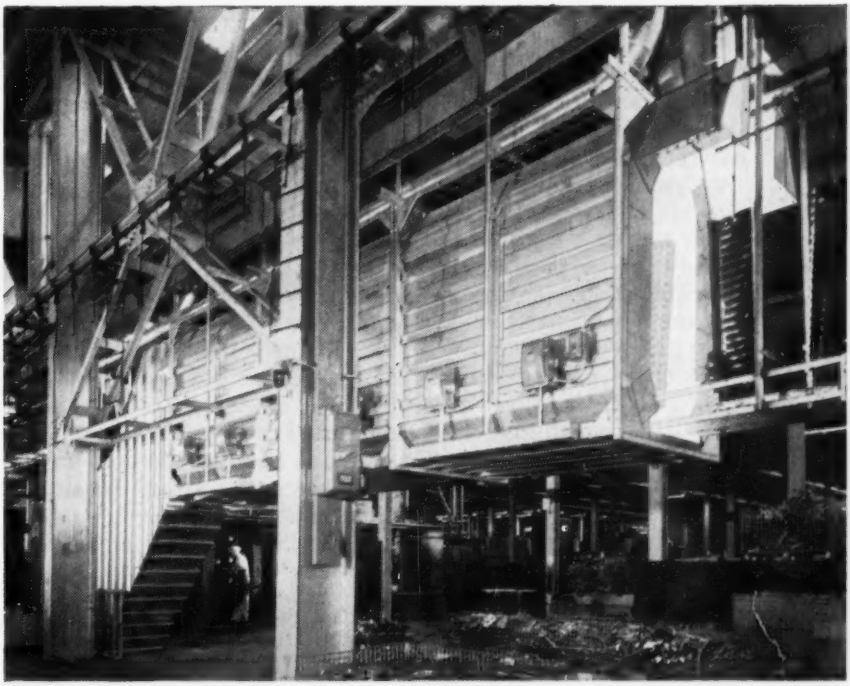

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these techniques require a drying operation prior to the chemical etch.

More than one masking technique may be employed on a single piece. If one entire side of the sheet is to be protected, the masking method on that side might be quite different from that on the other side which may have a complex pattern.

Parts may be returned to the masking department after the first stage of etching, in order to provide a finished article having different depths of cut. Objects for taper etching also may require special masking operations at some intermediate phase of the etching process.

Taper etching usually cannot be conducted at the same time as simple etching, but is most commonly carried out as a separate operation with special equipment for gradual or intermittent movement of the material into or out of the etching solution. When the tapered sections have been completed, masking alterations are made if necessary, and the work is transferred to the regular etching tank. If production rates are low, the same tank and solution can, of course, serve both purposes.

The etch tank (Fig. 5) calls for no unusual requirements. It must be as large as necessary to hold the anticipated work. Because the etching action is entirely a chemical attack on the surface, there is no problem

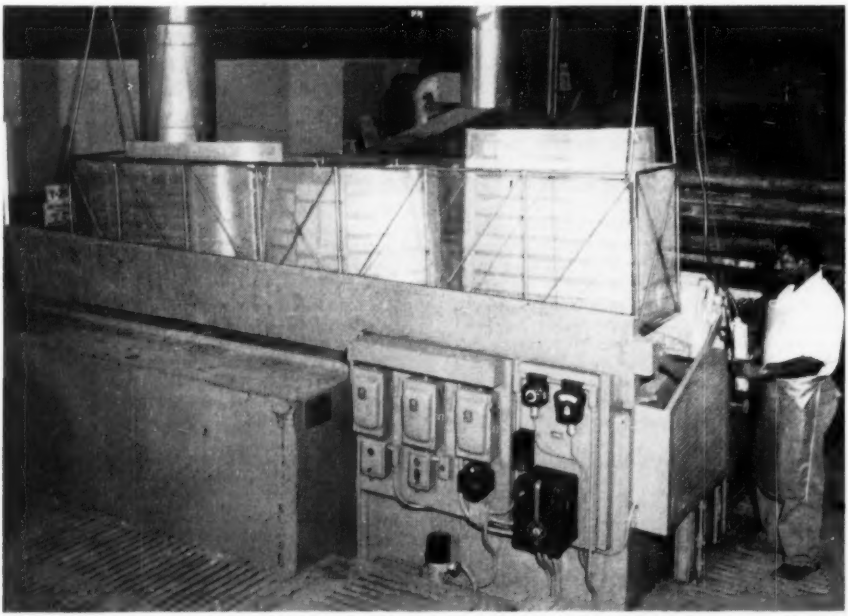

Fig. 6—Chemically milled parts are dried in oven after rinsing and removal of masking.

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of electric current distribution, or of agitation other than that produced normally by the work. Construction materials resistant to the etching acids and chemical are essential; polyethylene or vinyl coatings are commonly used. Fairly close temperature control is necessary, especially if exact tolerances are to be maintained on the degree or depth of etch.

Frequent or continuous maintenance of the solution composition is necessary, but the details of this practice vary with the type of solution and the metal being etched. The flow sheet accompanying this article indicates removal of a precipitated compound, such as aluminum hydrate, by means of a centrifuge, and its recovery as a by-product. With other solutions, recovery or disposal of the spent etch solution might be more difficult. Studies of the most efficient chemicals for etching various metals are an important part of current research on this process.

The metal product, after etching, usually passes to a cold water rinse, then to a special process for removing smut deposits. The masking compound is then removed, generally by chemical or solvent treatment, and the part is ready for final rinsing and inspection. Aluminum parts may be anodized at this stage, since the active surface produced by etching is in excellent condition for such after-treatment.

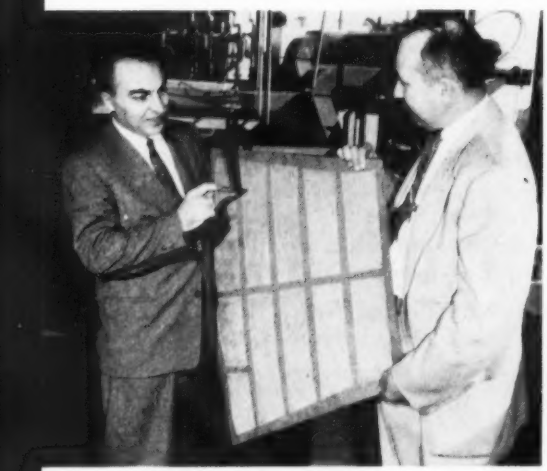

Fig. 7—Manuel C. Sanz (left), inventor of Chem-Mill Process, checks a chemically milled sheet with Don C. Atkins, Jr., supervisor of research and development in Turco's Chem-Mill Division. (Photographs courtesy North American Aviation, Inc., Los Angeles, Calif.)

Conclusion

Chemical milling has been utilized principally in the aircraft and missile industry up to the present, but it will undoubtedly find applications in other fields as well. Aluminum is the metal most commonly processed by this technique, but pilot plant production of steel, stainless steel, magnesium, and titanium articles is currently under way. Tolerances of $\pm$ 0.002 inch in addition to original part tolerances (Fig. 7), are readily attained, and there is practically no limitation on size or complexity of design that can be produced.

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Manufacturers' literature can help you solve finishing problems and select the best methods and materials. See "Product Literature" section of PRODUCTS FINISHING beginning on page 168 of this issue.

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Practical Applications of Modern Products

Automated Barrel Finishing Systems Hold Tight Tolerances on Automotive Parts

Holding a 0.0005-inch tolerance on the radii of centerless ground steel parts and retaining or improving 10-microinch surfaces on hardened, stamped metal parts are common problems in the metalworking industry. Complicate these problems with production requirements of hundreds of thousands of each part weekly and you can see why Detroit Transmission, a division of General Motors, installed an automated barrel finishing system, the first of its kind.

The 19-station in-line submerged-type barrel finishing system (Fig. 1) is used to descale, deburr, and burnish the hardened, stamped metal clutch plate components of Hydra-Matic automotive transmissions. A similar line of 13-stations degreases, deburrs and burnishes centerless ground steel valves of 532 different shapes and sizes, also used in transmission assemblies.

Each system has two parallel rows of tanks or stations and a central station where barrels are loaded and unloaded. When loaded with parts and abrasive chips, the barrels are automatically carried by hoist yokes on a power-and-free conveyor to the head of the finishing lines. Here alternating walking beams index or transfer the barrels from station to station at pre-set time intervals, which are constant in both lines and systems.

Control of Finishing Variables

Anyone familiar with standard barrel finishing procedures will recognize the advantages of the automatic cycling which these systems provide. Not only are the entire processing cycles automatic, but the loading and unloading operations have been mechanized to a high degree as well. Automation helps to control finishing variables that are vital to the micro-precision finishes demanded by recent advances.

At Detroit Transmission, from 20 to 30 valves of different shapes and sizes and 11 clutch plates are included in each transmission assembly; these parts must have low micro-inch surfaces and perfectly formed radii to assure proper transmission performance.

Before such finishes could be obtained at the desired production rate, some rather interesting technical problems had to be solved in materials handling and in stabilizing finishing compounds while in solution form. Later it will be seen how the successful solution of this latter problem aided efficiency in automated barrel finishing.

Previously, the method used to finish clutch plates was conventional barrel finishing. The clutch plate specifications for the 1956 transmissions were so strict that it was difficult, and at times impossible, to stay within them by standard barrel finishing processes. **For the valves, the previous finishing method** was handchucking. It was sometimes necessary to rework them a second and third time to stay within the 0.0005-inch tolerance limit. Here, too, standard barrel finishing had been used; process engineers at the company had observed that while the proper finishes could be obtained, part-on-part impingement or nicking of these delicate valves occurred during the loading and unloading operations. In an endeavor to overcome these problems, company engineers sent for engineers from Almco, Division of Queen Stove Works, Inc., a barrel finishing equipment and supplies manufacturer.

After a joint study of the matter, it appeared that specially designed materials handling equipment in combination with 47 single and double compartment finishing barrels would be required to meet the valve line finishing requirements.

Submerged-Type Finishing

At this time, submerged-type barrel finishing equipment was suggested as a more practical method. Using this method, a perforated barrel containing abrasive chips and work parts is lowered into a tank of finishing compound solution where it is rotated at a preselected speed. This action produces a "cushioning" effect while abrading and burnishing are being accomplished on the parts. The drive motor for the barrel is mounted on the tank or on the barrel, depending upon the number of finishing operations performed and the production required.

Various submerged barrel finishing techniques required to produce the finish specifications desired were developed at the Almco laboratory in Albert Lea, Minn. At the same time, Almco engineers designed a handling system

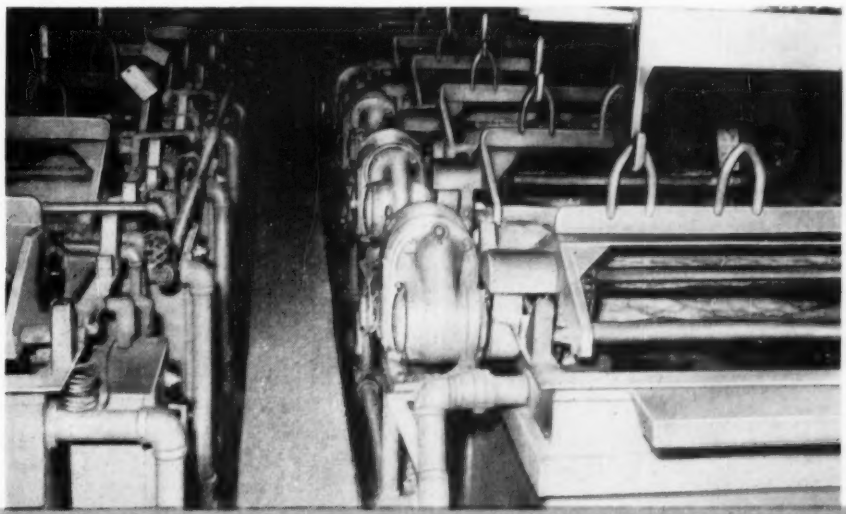
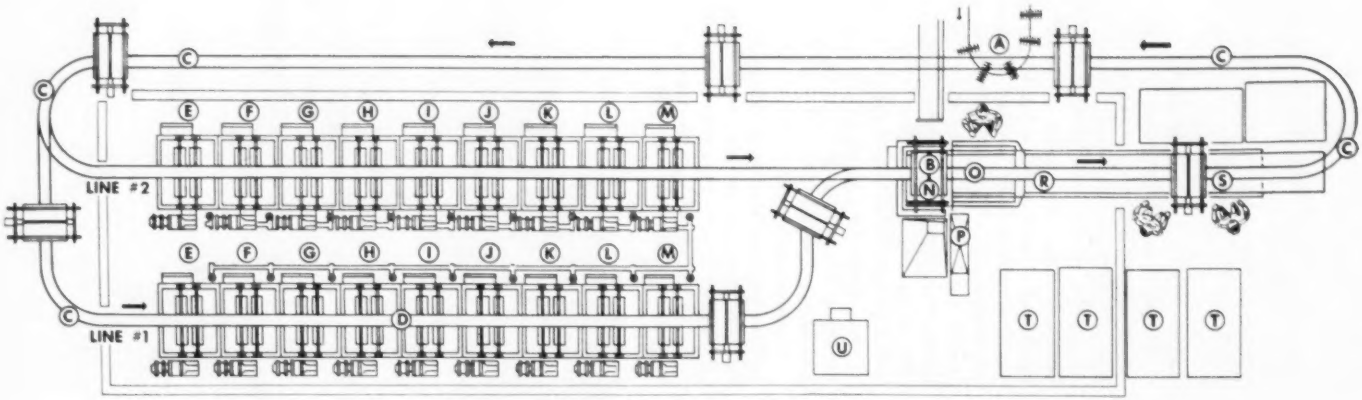


Fig. 1—A 19-station barrel finishing system for finishing transmission components.



CLUTCH PLATE LINE

Two 9-station submerged lines. Each line is serviced by automatic walking beams that index 9 barrels every 15 minutes from station to station during processing cycle.

Time cycle: 2 hours, 15 minutes per barrel. One barrel of finished parts completed every 7½ minutes.

Barrel size: Barrels are 22" x 28", 400 clutch plates are loaded into each barrel. A total of 3200 clutch plates are barrel finished per hour.

FLOW:

A. Clutch plates enter automated barrel finishing system on belt conveyor.
B. Loading station and unloading station. Plates are loaded into barrels by operator.
C. Barrels pass along conveyor system by power and free conveyor to start of automated finishing lines.
D. Barrels alternately enter overhead walking beams over lines 1 and 2; each index automatically every 15 minutes.
E. First station. Clear water rinse tank.
F, G, H, I, J. Descaling and grinding tanks.
K. Neutralizing and grinding tank.
L. Burnishing tank.
M. Coloring and rust inhibiting tanks.
N. Unloading and loading station. Parts and media are metered to neoprene-lined vibrating screen. Fig. 0.
P. Bucket elevation transfers media vertically to overhead media storage hopper. Chips are metered into barrels being loaded to re-enter system.
R. Tank conveyor with additional rust inhibiting solution.
S. Operators pick off barrel finished clutch plates and transfer them to wire baskets for storage or assembly.
T. Storage racks.
U. Storage for finishing compound.

Fig. 2—Conveyorized barrel finishing is used to finish clutch plates used in automatic transmissions. Above diagram shows the layout for this installation.

to convey barrels through an entire processing cycle which included degreasing, deburring, grinding, burnishing, rinsing, and rust inhibiting.

The amount of production determined how many tanks and barrels were required in the valve finishing line. In order to meet a continuous demand, one barrel load had to complete the process cycle every two and one-half minutes. The complete processing time for each load was 30 minutes. Thus, by dividing the finishing operations into five-minute time intervals, six barrels and six tanks were needed to have one load complete the cycle every five minutes. By duplicating the line, one load completed the cycle every two and one-half minutes. A slight time loss for the transfer of barrels from tank to tank was considered, of course.

Finishing Clutch Plates

It was apparent that the same type of system, with some modifications, could be used to finish the stamped metal clutch plates (Fig. 2) i.e., a rinse tank; five descaling-burnishing tanks; a neutralizing and grinding tank; a burnishing tank; and a coloring and rust inhibiting tank. Since processing time per barrel load was 2 hours and 15 minutes, duplicate lines were necessary to produce a completely processed load of parts every 7½ minutes.

Both the valve line and clutch plate systems employ power-and-free conveyors to carry barrels from the loading-unloading stations to the first finishing stations. Both also have alternating walking beams to index barrels from station to station at pre-set time intervals during processing. The barrels raise simultaneously, "dwell" above the tanks for 45 seconds to drain and then index to the next stations. As barrels lower, roller guides align barrels with variable speed motors. The limit switches on each motor cut in when barrels are in correct position.

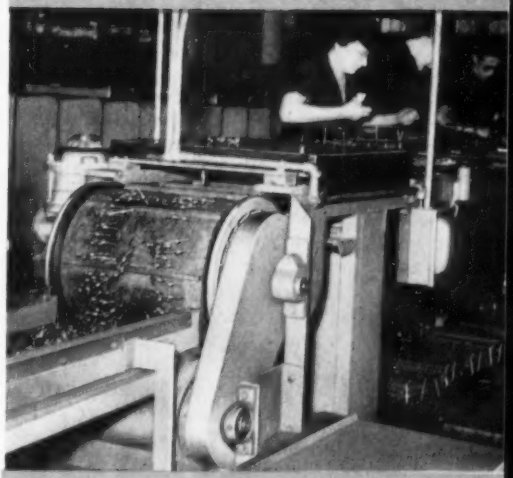


Fig. 3—Magnetic pulley is used to separate finished parts from media. After separation, parts move over demagnetizing coil, are then "picked off" and placed into baskets.

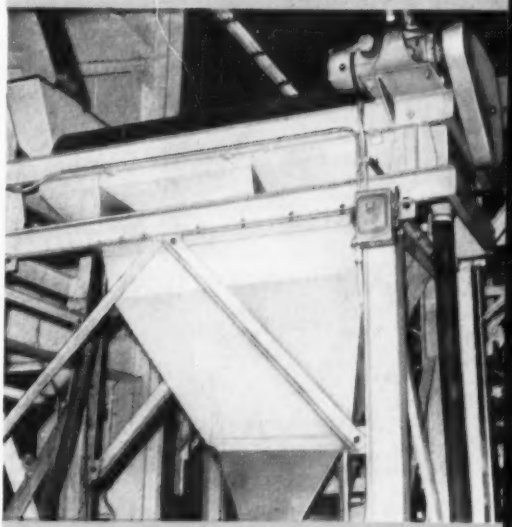


Fig. 4—This rotary screen classifier is used to classify chips according to size. After classification, they drop into the proper bin, are ready for use in another cycle.

Materials Handling System

Because of differences in the parts and the abrasive media or chips used to finish the parts, different types of handling and separating equipment are used in each system. Fig. 3 shows the magnetic pulley which separates the steel valves from the media chips after the barrel load has been metered onto a barrel conveyor. The parts pass up to another conveyor belt and over a demagnetizing coil; they are then "picked-off" by operators and are placed in wire baskets for assembly. At the same time, the media chips drop into a vertical bucket elevator and are carried up to an overhead rotary screen classifier (Fig. 4). This unit separates chips according to size and drops them into their proper storage bins. This equipment handles 10,000 pounds of chips per hour.

In the clutch plate system, the parts and media are unloaded onto a Neoprene-lined, vibrating belt which passes through a tank of additional rust inhibiting solution (Fig. 5). They are then conveyed to a "pick-off" table where operators remove them for assembly. Since only one size of abrasive chips is used in finishing these parts, the chips are elevated to an overhead storage hopper.

In each system, the operator reloads chips into the barrels via a swivel chute that is controlled by an air-operated cylinder (Fig. 6). The operation is automatic; only correct amounts or sizes of media chips can be used.

Compound Consumption

Detroit Transmission has been able to reduce compound consumption substantially. The lower consumption is due in part to specially formulated finishing compounds which retain their cutting and burnishing properties for extended periods of time. It was also found that compounds would remain

To page 78→

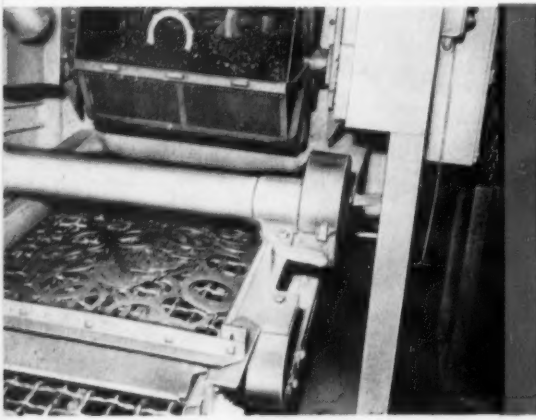


Fig. 5—A neoprene-lined, vibrating belt is used to separate parts and media in the clutch plate system. Belt carries the parts through a tank containing rust inhibitor, then to a "pick-off" table where they are removed for assembly into Hydra-Matic transmissions.

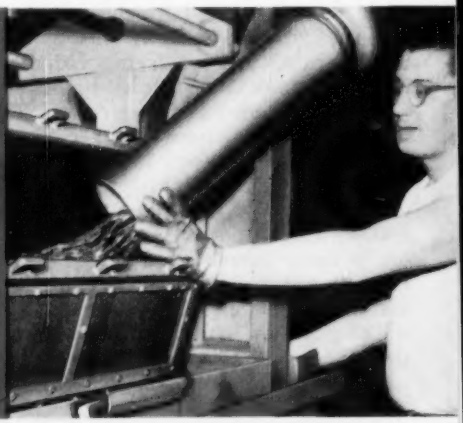
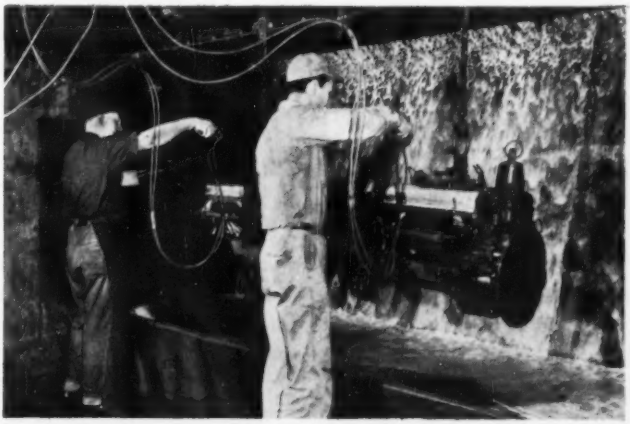


Fig. 6—Chips are reloaded into the barrels via a swivel chute. Air operated, it automatically dispenses the proper amount of media chips. (Photos courtesy Almco Div., Queen Stove Wks., Inc., and Detroit Transmission Division of General Motors Corporation)

"MOST OUTSTANDING PAINT AND COATING DEVELOPMENT IN 50 YEARS"



BEDE *Airless* SPRAY COATING SYSTEMS

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For more data circle 189 on Reader Service Card

Facts to consider when you're buying

Chromate Conversion Coatings

for Corrosion Protection, Paint Base, Decorative Finishing

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002″ max.) gel-like, complex chromate film of a nonporous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

If your company is manufacturing or buying parts or complete assemblies made from or plated with any of the more common non-ferrous metals—zinc, cadmium, aluminum, magnesium, silver, copper, brass or bronze—you've probably already run up against the question of finishing these surfaces with a chromate conversion coating. These coatings are used to protect against corrosion, or to provide a base for paint or to provide a decorative finish for sales appeal or shelf life. Since chromate conversion coatings represent a relatively new means of obtaining these finishes, this digest of facts to consider may be of value to you.

1. THE COATINGS THEMSELVES. There are many brands on the market. All are similar in many ways. Each, of course, offers its own specific advantages and these may relate to operating techniques, performance under actual use conditions, cost, availability, etc. Naturally, you'll want to choose a coating that is widely known and accepted under both military and civilian specifications.

2. THE COMPANY BEHIND THE PRODUCT. Is it a reliable, established organization? Does it offer experienced technical service, both from the field-engineering organization as well as the home office and laboratories? The man who sells and services your installation should be thoroughly familiar with not only chromate conversion coatings and their applications, but also with the characteristics and performance of related finishing operations such as pre-cleaning, electroplating, painting, etc. This is most important since all steps of the finishing cycle must be functioning

(ADV.)

properly for the satisfactory performance of the ultimate finish produced.

3. AVAILABILITY OF THE PRODUCT. Ideally, of course, the material should be readily available to you from nearby warehouses to avoid time loss in long distance shipping and to provide emergency service, should the need arise.

4. COST. Naturally, the initial price of the material is important to you. However, just as you consider ultimate cost when you are buying mechanical equipment, ultimate cost must be considered for these finishing chemicals. So, it will pay you to investigate consumption costs, labor costs and the other factors which go into the determination of ultimate cost. Further, cost alone gives no indication of product performance, so careful attention must be given to the purpose the finish must serve and the value that finish will add to your product.

5. FACILITIES FOR RESEARCH AND DEVELOPMENT. Perhaps the existing types of chromate conversion coatings do not include a compound that will accomplish exactly what you wish. Then, it is important to deal with a supplier who has adequate research and development facilities available to work with you to produce a material to meet your needs. Naturally, such a project is seldom completed overnight. But, with complete cooperation and confidence from both you and your supplier, chances are a satisfactory program can be completed.

These are the concepts of sales and service on which we, Allied Research Products, Incorporated, have developed and marketed the line of Iridite chromate conversion coatings . . . superior product performance, complete sales and technical service, easy product availability, economical cost, extensive research and development facilities. No doubt you are familiar with our line and have seen this trademark—

IRIDITE®

—in our advertising, technical literature or on shipping containers in your plant. Remember this trademark when you're buying or investigating chromate conversion coatings for your company. It's your assurance of quality, economical products from a reliable and established company, skilled sales and technical service from both our home office and a national network of representatives, immediate availability from warehouses in strategic industrial areas and our willingness to work with you to develop new finishes to meet your needs, should the present line fall short.

For complete information on Iridite chromate conversion coatings, write today for your free copy of our technical data file. Or, for immediate advice, call in your Allied Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED
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Manufacturers of Iridite chromate conversion coatings for corrosion resistance, paint systems, final finishing of non-ferrous metals; ARP Plating Brightener & Chemicals.
West Coast Licensee—L. H. Butcher Co.
For more data circle 190 on Reader Service Card (ADV.)

in suspension longer and retain their finishing qualities better by controlling temperature of the finishing solutions. To do this, a steam heating unit was installed on each tank. Compounds retain their effectiveness for periods up to two weeks.

Other advantages automated barrel finishing provide are: the time that is saved by eliminating the charging, flushing and recharging of barrels after every finishing operation; improved control and uniformity; and less floor space required for the installation.

Pinplanet Pinion Finishing

In addition to the two automated systems, two single submerged-type finishing barrels were also installed. These are used to improve surface finishes on pinplanet pinion parts from 7 to 10-microinch down to from 3 to 5. Also, this operation blends the radius of the outside diameter with the pin end. The barrels and tanks are identical to those in the automated systems except that the variable speed drives are mounted on the barrels instead of the tanks. This design permits barrels to be positioned for loading and unloading more easily.

For more data circle 1 on Reader Service Card

★ ★ ★

Coated Abrasives Speed Polishing

Coated abrasive belts and "PG" wheels have helped to speed weld grinding and blending and polishing operations at Saha Manufacturing Co., Darby, Pennsylvania. Manufacture of the diversified carbon and stainless steel products of this company almost always calls for weld grinding and polishing to be performed.

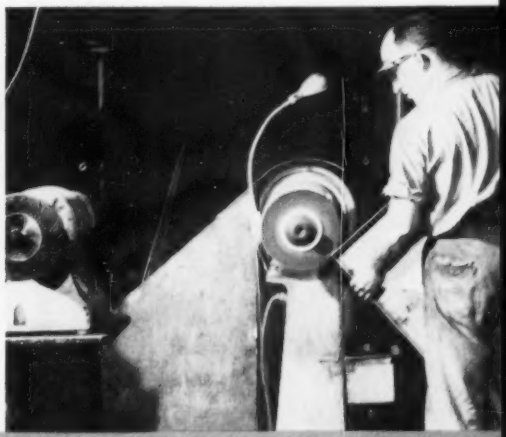
In addition to control boxes and aerial bomb sections (both of which must meet government specifications), the firm manufactures metal cases for business machines, auger power units for the chemical industry, stainless steel meat trays for commercial freezers, stainless pans for food dispensers, such as popcorn and candy machines, and other varied items.

Nicholas Esposito, Saha production

Fig. 1—Besides being made of steel, these diversified products all have something else in common: they were ground and polished with coated abrasives—either belts or "PG" wheels.

manager, points out that the introduction of Minnesota Mining and Manufacturing Company's coated abrasive belts and PG (polishing and grinding) wheels to the metal fabricating company's production lines has resulted in simplifying many operations. It is also producing a higher quality finish.

On welded stainless steel meat trays, for instance, the coated abrasive method is used to grind welds. The welds are ground with a 2 by 132-inch, aluminum oxide-grit, 50-resin-bonded belt, backed up by an 85-durometer slotted contact wheel. Blending is done with a 2 by 10-inch aluminum oxide PG wheel, grit



Figs. 2 and 3—Welds on stainless steel meat trays are first ground on a grit 50 abrasive belt (left) and then blended on a grit-60 PG wheel, which produces simulated No. 4 finish (right). Stationary PG wheel can be seen on lathe at left of this wheel. (All photos used in this article courtesy Minnesota Mining & Mfg. Company, St. Paul, Minnesota)

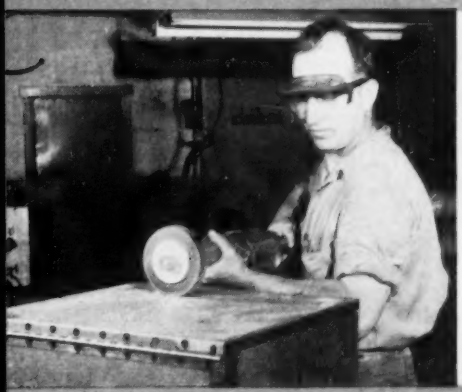


Fig. 4—For blending welds, a one by six-inch PG wheel on a portable polisher is used.

Fig. 5—Panels and strips are ground and polished on stroke sander, using Resinite belts.

To page 82→

THIS *PAASCHE* GUN IS A

PERFECT BALANCE: The Paasche Model 21 has a compact head, a generous two-finger trigger with easy pull and a comfortable handle—all in perfect balance.

INFINITE SPRAY PATTERN ADJUSTMENT: The new dual purpose air valve permits the use of air from horn holes only, center air cap holes only, or an intermixture of any proportion from these sources. The atomizing air control and the fan control afford infinite pattern adjustment with a minimum number of air caps.

BUILT FOR HEAVY USE: The one-piece heat-treated aluminum forged shell can really take abuse. Tough, durable anodized finish with chrome-plated drop forged brass fluid body make this a handsome gun that will not show wear. All internal metal parts are stainless steel. Teflon packing materials are self-lubricating, will not dry out.

ECONOMY OF OPERATION: Large, unrestriced air passages of short travel through the gun assure high volume of air atomizing even the heaviest materials at lower pressures.

EASY MAINTENANCE AND SERVICING: Gun body is well-rounded and highly polished making it easy to wipe clean. Cartridge type air valve assembly is easily removed for repair or replacement if ever required.

CONSULT YOUR CLASSIFIED DIRECTORY FOR NEAREST PAASCHE REPRESENTATIVE OR WRITE FOR INFORMATIVE BULLETIN.

PAASCHE Has Been "First" More Than Any Other Spray Painting Equipment Manufacturer

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MASTER PAINTER'S DREAM

Perfect Balance, Smooth Action, Infinite Spray Pattern Control . . .
A Gun That Inspires Full Pride in Workmanship

60. Both the belt and the PG wheel are mounted on a three-h.p. lathe running at 2,000 r.p.m.

Weld grinding and blending is followed by polishing with a grit-100 PG wheel which leaves a simulated No. 4 finish that can be easily buffed to a simulated No. 7 finish.

A relatively new product for weld treatment, the small coated abrasive wheel (in this instance a 1 by 6-inch) is also used at Saha on portable grinders for cleaning spot welds and blending blemishes on units too large to be taken to a backstand. The small polishing and grinding wheels are used in grits 60 and 100, with grinders rated at a load speed of 3,500 r.p.m. On this operation the PG wheel life is about 50 utility boxes, or 5,000 lineal inches of blended surface. When painting is specified, it is applied over a grit 60 PG finish.

Each PG wheel is made of hundreds of pieces of die cut, cloth-backed coated abrasives. The wheels may be preformed, or they will shape themselves to the workpiece. As the wheel wears away—mineral and backing wear together—its rate of cut and the microinch finish it produces remain constant. It is not necessary to increase arbor speed to maintain cut during the life of the wheel and its sharpness is assured by the new mineral that is continuously being presented to the work.

The Saha Company uses both coated abrasive belts and PG wheels — mounted on a variety of equipment, including a stroke sander, two backstands, five portable grinders and three bench or pedestal grinders (3,450 r.p.m.). Time on all major grinding and blending jobs has been reduced, and higher quality finishes are being obtained, the company reports.

For jobs requiring a stroke sander, the manufacturing firm has found use of an aluminum oxide Resinite cloth belt advantageous. The machine utilizes the belts in two grits, 80 and 120, for polishing steel panels, strips, pans and other similar pieces. The Resinite belt showed particular advantage in cleaning light scale from carbon steel prior to forming.

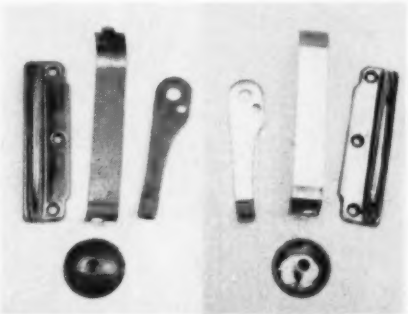
For more data circle **2** on Reader Service Card

★ ★ ★

Cleaner Does Good Burnishing Job, Too

The accompanying illustration is a "before and after" photo of steel cabinet parts burnished with Wyandotte Burnek-452 by a large manufacturer of plated cabinet and building hardware.

Users report Burnek-452 to be dual purpose — effective for both cleaning and burnishing. Residual compound left on the parts acts as a temporary



rust preventive. Field tests and plant use show Burnek-452 to be non-foaming even at 2 ounces/gallon. The product is non-dusty and develops high luster in minimum operating time in either hard or soft water, it is stated.

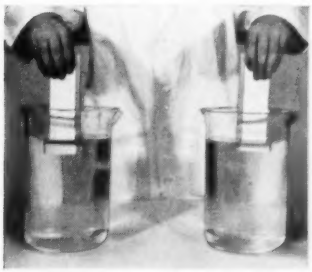
A technical bulletin is available describing properties of Wyandotte Burnek-452.

For more data circle **3** on Reader Service Card

How Aluminux process prevents

ROCK-HARD SCALE

in your etching tanks



IDENTICAL ALUMINUM EXTRUSIONS *are placed in equal-strength solutions of Diversey Aluminux (left) and an ordinary etchant (right).*

ALUMINUM HAS NOW BEEN DISSOLVED IN BOTH SOLUTIONS, *but look at the difference! In the Aluminux solution at left, the dissolved aluminum has been held in solution with no trace of precipitate. But, in the ordinary etchant at right, the solution is cloudy with a heavy precipitate. This precipitate is aluminum oxide, the deposit that builds up as rock-hard scale inside your etching tanks.*

WHAT SCALE IS COSTING YOU

Any way you look at it, the time-consuming job of hacking away at scale inside aluminum etching tanks is a terrible waste. It means down-time and lost production, wear and tear on equipment, non-productive use of expensive labor (and probably at overtime rates). Scale runs up costs in other ways too, such as cutting down efficiency of heating coils and adhering to work in process.

The serious problem of scale and sludge in etching tanks has been successfully eliminated by the Diversey Aluminux process. As these photos show, Aluminux contains a chemical agent that holds dissolved aluminum in solution, instead of depositing it on tank walls and heating coils in the form of sludge and scale. In a 1500 gallon tank, for instance, Aluminux holds up to 1,000 lbs. of dissolved aluminum in solution . . . *a potential one ton of scale that would otherwise have to be chipped off!*

SUPERIOR FINISH AND FASTER ETCH RATE

The production-line performance of Aluminux during the past few years has proved its remarkable advantages. These include: (1) Far less frequent dumping . . . solutions last up to 4 times longer with no scale build-up, (2) superior, even, diffused satin-finish and cleaner work, (3) faster rate of etch and increased production, (4) lower maintenance costs . . . tanks are simply hosed out when re-charging, (5) precision control of degree of etch.

For more facts about the exceptional savings other manufacturers are getting with Aluminux, ask your nearby Diversey D-Man. You'll find him an experienced, dependable consultant on your metal finishing problems.

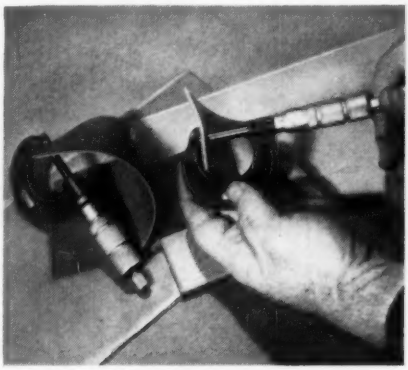
For an interesting illustrated brochure on the Aluminux process, write today to Metal Industries Department, The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.

For more data circle **192** on Reader Service Card (ADV.)

News about UNICHROME

Trade Mark

Protective coating 60 mils thick or more with one spraying

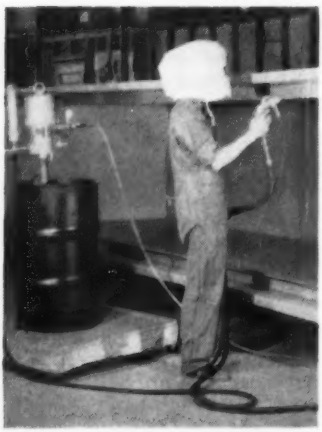


Unichrome "Super 5300" Coating delivers the full solids content of vinyl plastisol through a spray gun and builds up a coat 60 mils thick or more in one application. Less of course, if desired.

The coating is physically tough and flexible. It doesn't chip or tear. It has the chemical resistance as well as the thickness to withstand contact indefinitely with solutions, cleaners, water and other corrosives.

Send for Bulletin SVP-1.

Plastisols ideal for protecting tanks



Because of its thickness, chemical inertness and sprayability, the new Unichrome "Super 5300" Plastisol Coating makes a superior tank lining. It can withstand continuous contact with severely corrosive solutions, save over the cost of applying sheet-type linings, and has no seams for corrosive solutions to penetrate. Moreover, there now exist a number of strategically located companies skilled in applying Unichrome Plastisols, and which have the baking facilities to handle even large tanks. Send for names.

Unichrome is a trademark of Metal & Thermit Corp.

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For more data circle **193** on Reader Service Card

NEW CHROMATE DIPS CUT COSTS

Unichrome Dips developed that provide chromate solutions with lower make up and operating costs

An unusually wide line of Unichrome Dips for zinc plate, die castings, and cadmium has been made even more inclusive by three new additions to the line. Two of the new compounds are the dry, or powder, form for extra economy in shipping and handling. The third is a wet compound which facilitates solution mixing. All, however, work at extreme dilutions.

NEW ECONOMY

At low make-up concentrations, cost of these three Unichrome Dips descends to a new low. Unichrome Dips are also known for the long service they give before being discarded. End result is the low cost per sq. ft. of finish reported by so many users of Unichrome Dips.

MATCHED TO THE NEED

Unichrome Dip Solutions, forming corrosion-resistant finishes integral with the zinc, improve and protect its eye appeal. Since chromate dips are active solutions which *strip* the zinc as well as convert its surface into an attractive but inactive film, the type of equipment used and the operating time or cycle affect results. The differing needs of manual or automatic finishing must be satisfied to produce the color, the corrosion resistance, the uniformity of finish — as well as the economy desired. No single chromate solution is equally suitable for all applications. This explains why so many specialized Unichrome Dip Compounds are available.

Metal & Thermit will gladly recommend the proper dip to meet specific needs. Simply submit details of the product and the requirements.

For more data circle **194** on Reader Service Card

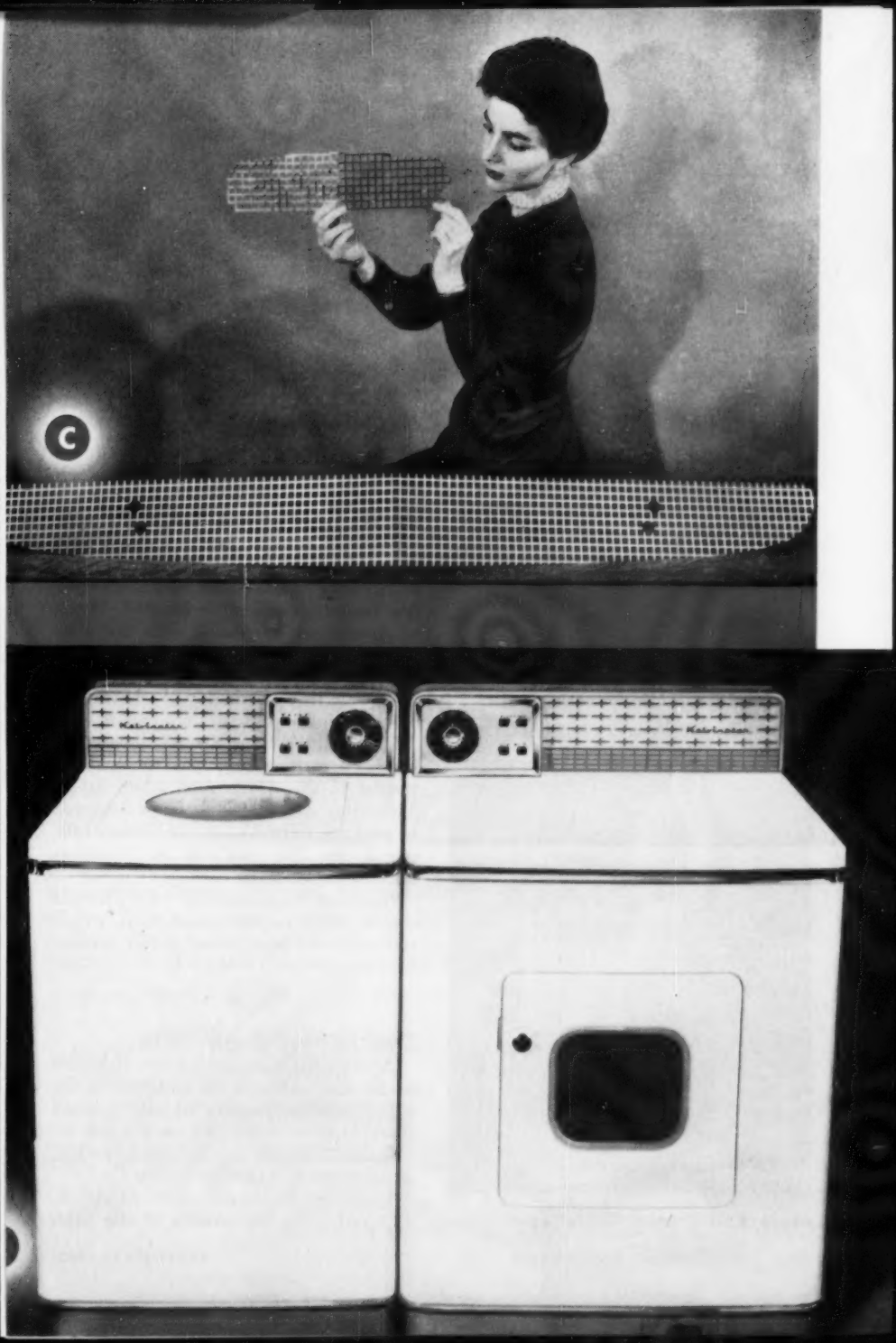
Finishes That Aid in Appearance and Utility

A **The paintings shown** on these containers are produced by printing on tin plate. Containers were made in one of the oldest tin printing plants in the world—Hudson Scott & Co., Carlisle, England. This company, which did its first tin printing in 1885, is now a part of the large Metal Box Company combine, which produces containers in all shapes and sizes for use all over the world. The process used is much like conventional color printing on paper, with special impressions used for each color printed. Before printing, the tin plate is given a size coating. After printing, the work is baked and then formed.

B **These industrial vacuum cleaners,** made by Premier Company, Minneapolis, Minn., are protected and beautified by two types of finishes: (left) polished stainless steel, (right), multi-colored baked enamels.

C **Gold anodized aluminum grilles** are featured on both the Plymouth and DeSoto for 1956. The small grille is the center of the Plymouth grille. The larger grille below is used on this year's DeSotos. Both cars also use gold anodized aluminum "Vee" emblems on models equipped with V-8 engines.

D **Washers and dryers,** too, make use of the attractive finishes that can be produced by anodizing and dyeing aluminum. Backguard of recently-introduced 1957 Kelvinator washers and dryers are pink gold anodized aluminum. Body of the washer is epoxy-primed and finished in baked enamel. Dryer is also finished with white baked enamel. Washer cabinet top, lid and interior tub are all finished with alkali-resistant porcelain enamel.



New Equipment, Materials, Processes

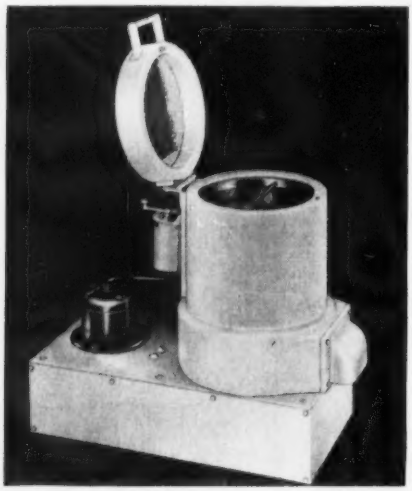
› Cleaning
› Polishing
› Plating
› Paint Finishing

Centrifugal Dryer

A recently-developed Mercil belt-driven centrifugal dryer incorporates important safety features, according to an announcement from Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

The dryer, Model 56, is driven by two standard V-belts, which are powered by a ½-h.p. motor. This design prevents moisture from entering the motor, it is stated.

The dryer basket revolves at approximately 500 r.p.m. It will handle loads up to 70 pounds, depending on size and type of work being processed.



Mercil Belt-driven Centrifugal Dryer

The dryer is available electrically heated. A suction fan is mounted to draw air down through the work from an opening in the cover, where an electric heating element is located. Heated dryers are furnished with red covers as a safety measure, to warn the user against touching the hot cover. Both heating elements and motor drive are automatically controlled.

The hinge on the cover is located at the back of the dryer and remains attached to the dryer shell when lifted. The outer shell of the dryer is designed to prevent particles of work from falling under the turntable and damaging the drive shaft.

Optional equipment includes a clutch pulley on the motor shaft, which reduces wear and initial motor torque.

For more data circle **4** on Reader Service Card

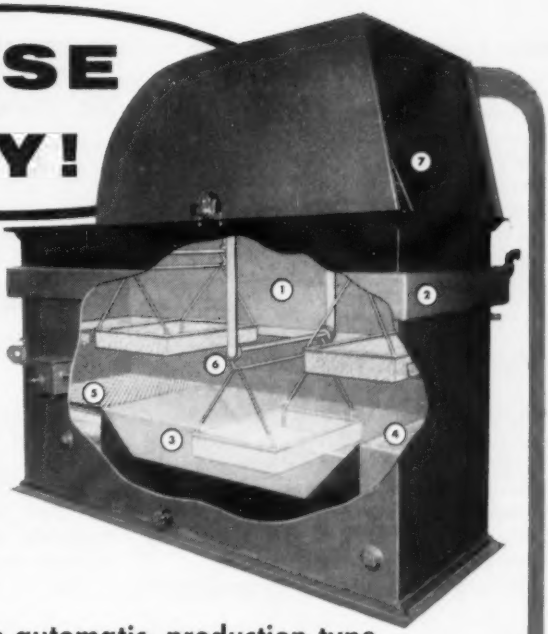
★ ★ ★

Compressed Air Filter

A filter for compressed air, that can lie on the floor and be attached to the spray painting apparatus with a small piece of hose or carried on the belt by means of belt hooks has been announced by Sharpe Manufacturing Co.

Improved baffle design of Model F-22A enhances the ability of the filter

LEASE or BUY!



PHILLIPS
ROTOMATIC VAPOR DEGREASER
WITH LIQUID DIP

Combination of automatic time cycle, liquid solvent dip, and vapor degreasing — all in one unit. Cutaway view illustrates construction and operation: **1**—Vapor degreasing area; **2**—Condensing water jacket; **3**—Cool rinse washes off chips and insolubles; **4**—Reso-Kleen sump supplies clean solvent to rinse sump; **5**—Boiling sump generates vapor; **6**—Rotating reel for baskets, with timed cleaning cycle; **7**—Loading and unloading point. Capacities from 1800 to 4000 pounds per hour.

NOW! This automatic, production type degreaser can be yours on purchase or lease

. . . for less than 15c per operating hour!

Automatic, high production degreasing on purchase or lease — at very low cost! It can be yours for less than 15c per operating hour!*

This degreaser handles a variety of small metal parts . . . Has adjustable control time cycle . . . Has continuous one-man operation . . . Assures complete cleaning and drying in blind holes and recesses. Available with tumblers for parts that tend to nest.

This machine is one of a complete line of Phillips degreasers. Your Phillips representative can help you determine your needs. Call him today — or write, wire or phone direct.

** Figures are for Model 60RM — Capacity 1800 pounds per hour.*

PHILLIPS MFG. CO.
3457 W. TOUHY AVE., CHICAGO 45, ILLINOIS
AMbassador 2-6020

SEND FOR NEW *FREE* CATALOG

ENGINEERED SERVICE

PHILLIPS

For more data circle **197** on Reader Service Card

to remove moisture from the air and eliminate condensation in the hose caused when the hot and cold air meet, it is stated.

A catalog is available from Sharpe Manufacturing Co., 1224 Wall St., Los Angeles, Calif.

For more data circle **5** on Reader Service Card

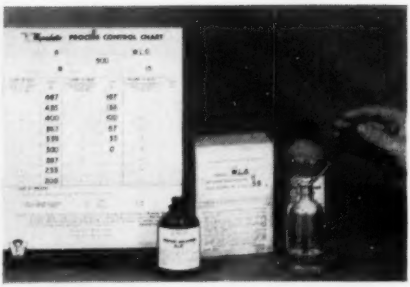
★ ★ ★

Process Control Chart

A Process Control Chart that permits users of metal processing solutions to eliminate calculation of quantities of chemicals necessary to maintain efficient strength, has been released by Wyandotte Chemicals Corp., Wyandotte, Mich. The chart is used with Wyandotte's Industrial Testkit.

With the Wyandotte Process Control Chart, it is possible to post a permanent "make-up" record by each tank for the particular product in use. Required solution additions are read directly from the chart, thus permitting operators to maintain efficient solution strength without troublesome calculations.

The Wyandotte Industrial Testkit



Wyandotte Process Control Chart and Testkit

SPRAY IT ON
in one coat . . .
STRIP IT OFF
in one sheet

BOOTHGUARD
strippable, fire-safe spray booth coating

COVERS BOOTH COMPLETELY WITH ONLY 1 COAT!
BoothGuard (the strongest coating made) will not web or run when applied, nor tear or shred when peeled. One bright, white coat covers entire booth, dries fast, clings tight till you remove it.

BOOTHGUARD S super-speed dry
No shut down time. Highest coverage at lowest cost.

BOOTHGUARD W high solids water base
Non-inflammable in storage.

Order 5 gallon test samples at drum prices from your nearest distributor:

DISTRIBUTED BY
Whitfield Chemical Co., Detroit 27, Mich.
Chrom-o-Lite Co., Minneapolis 23, Minn.
Pennsylvania Lacquer Center, Philo. 6, Pa.
Acme Auto Paint & Supply Corp., Milwaukee 3, Wis.
Durling & Scott, Baltimore 12, Md.
Gerard Electric Co., Boston 15, Mass.
Scobell Chemical Co., Rochester 10, N. Y.
Some territories still available. Write for details.

GUARD COATINGS CORPORATION
8-05 43rd AVE., LONG ISLAND CITY, N. Y.
Manufacturers of a complete line of temporary protective coatings for metals, glass and enamel.

For more data circle **198** on Reader Service Card

"We cut our costs 99.1% by deburring end covers with

ALMCO

BARREL FINISHING EQUIPMENT"

J. P. Scavo of the Underwood engineering department shows typewriter parts deburred with Almco equipment.

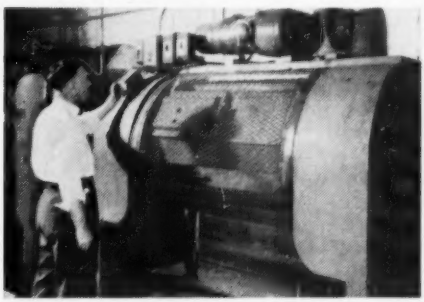
UNDERWOOD CORPORATION PROCESSES 1600 TYPEWRITER PARTS IN ONE HOUR, SAVES $6632 PER YEAR

Substantial savings every day with Almco barrel finishing equipment! That's been proven at the Underwood Corporation, Hartford, Connecticut. An Almco Model DB-400 speedily deburrs typewriter end covers—and the clean, uniform surface provides an ideal base for paint adhesion.

Previously, Underwood used wheel deburring methods . . . 150 parts were processed each hour . . . rejects were frequent . . . labor costs were high.

Now, it takes only one hour to process 1600 parts. Rejects have been eliminated. And, with Almco equipment, Underwood saves $6632 a year on end covers!

It's simple to get expert advice on barrel finishing from Almco. Write on company letterhead asking for an Almco engineer to call. Or send in your sample parts with specifications on results desired. Expert Almco technicians will provide a factual report with no obligation.



A flip of the switch and hundreds of Underwood typewriter parts are deburred in the Almco Model DB-400 barrel finishing machine.

SEND FOR YOUR ALMCO BARREL FINISHING HANDBOOK

52 fact-filled pages of barrel finishing information. It shows how to adapt the Almco Supersheen process to many types of metal parts. Send for your copy.

ALMCO

Division of Queen Stove Works, Inc.

810 Marshall St. • Albert Lea, Minn.

Sales Engineering Offices in Chicago, Detroit, Los Angeles, Newark, New Haven, Philadelphia and London, England

For more data circle **199** on Reader Service Card

gives a simple, non-technical, yet accurate procedure for instantly controlling solutions of: alkaline soak cleaners; electrocleaners; phosphating cleaners; rust removers; metal etchants; and water wash spray booth compounds.

The label on the case containing each Industrial Testkit is color coded and marked for use with a particular product. At the time the product is introduced, the Wyandotte representative fills in the Process Control Chart, which gives a permanent operating record.

For more data circle 7 on Reader Service Card

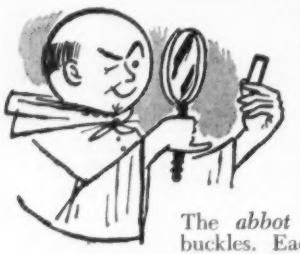
★ ★ ★

Water-Reducible Paints

A line of water-reducible enamels, primers and clears, called "Uni-Mulsion," has been introduced by Universal Paint & Varnish, Inc., Northfield & Krick Rds., Bedford, Ohio.

The manufacturer states that these coatings have the following characteristics: adhesion—compares favorably with solvent-based systems; gloss—can be varied from a high gloss to a low sheen; flexibility—good; moisture resistance — clear Uni-Mulsion film ½ mil thick on steel has withstood 1,000 hours in the humidity cabinet without failure; chemical resistance — good—copolymer resins used aid in chemical resistance.

Other advantages include the reduced fire hazard that results from thinning with water rather than organic solvents; lack of



The abbot and the Million Shiny Buckles

The *abbot* studied the small watchband buckles. Each was stamped from stainless steel with nicely defined, square corners, evenly spaced decorative ridges and precisely placed pinion holes.

The little man's visitor wore a worried frown. "How," he asked, "can we put a good, shiny finish on a million of 'em quickly and economically?"

In less than a week, the *abbot* mailed his meticulously typed reply. "Your watchband needs burnishing," he wrote, "Try barrel burnishing with Abbott 3/16" Diagonals. You'll find they are shaped to do the job right. Besides, the Abbott Method is fast, economical and thorough."

Abbott Burnishing Materials make efficient and uniform contact on metal parts and castings of every size and shape. Made from selected carbon steels, they are Deep Hardened with a glass-hard, mirror-like finish. Combined with the Abbott Vertical Barrel, they make the *perfect* barrel finishing combination.

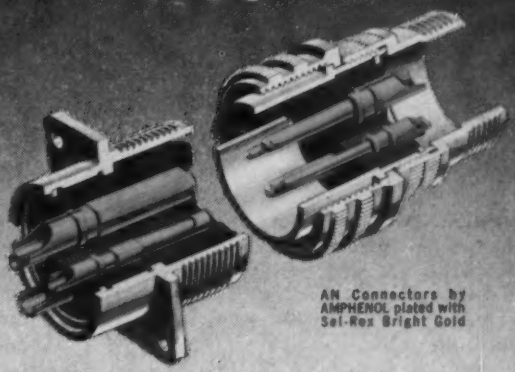
ABBOTT

Let the abbot show you how The Abbott Method can help you. Drop a line to . . .

The ABBOTT BALL Company
1064 New Britain Avenue, Hartford 10, Conn.

For more data circle 200 on Reader Service Card

NOBLE METALS ARE PUT TO WORK!



AN Connectors by AMPHENOL plated with Sel-Rex Bright Gold

Sel-Rex

PRECIOUS METAL PROCESSES
for Industrial Applications

Sel-Rex BRIGHT GOLD deposits are more dense and twice as hard. Give mirror bright finish directly from the bath — eliminate costly scratch brushing, buffing and burnishing.

Sel-Rex BRIGHT RHODIUM meets the needs of today's precise engineering applications with A.S.C. — Automatic Stress Compensation — a special technique which counteracts the high stress characteristics of conventional rhodium electroplates.

Sel-Rex Silver SOL-U-SALT (Non dusting) is added directly to the plating bath, eliminating time consuming filtering or mixing.

Write for descriptive literature and technical data.

Sel-Rex Precious Metals, Inc.

229 MAIN STREET **BELLEVILLE 9, N. J.**

For more data circle 201 on Reader Service Card

odor; fast air dry and baking cycles; freeze-thaw stability; wet parts may be introduced into Uni-Mulsion dip tanks during processing cycles; the paint can be reduced with water.

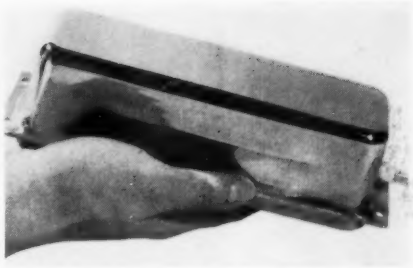
These coatings can be applied by spray, electrostatic spray or dipping. They air dry fast but should be baked if best film qualities are to be attained.

For more data circle 8 on Reader Service Card

★ ★ ★

Ultrasonic Cleaning Equipment

Hermetically-sealed ultrasonic power transducers and generators operating at 40 kc./sec. have been announced by Branson Ultrasonic Co., 37 Brown House Rd., Stamford, Conn. Versatile design of the transducer makes it possible to use ultrasonic energy in varied applications.



Hermetically-sealed ultrasonic transducer

The large, uniform radiating surface of the transducers makes them suitable for ultrasonic metal cleaning applications, such as removal of buffing compounds, radioactive contamination, soldering flux, plaster and carbon smut. The transducers also can be used for other processes which benefit from ultrasonic energy, such as quenching, plating, pickling and descaling.

The standard LF-15 transducer has

BISON CORPORATION

BISON BUFFS
are made by
BISON CORPORATION

Air-cooled VENTEX buffs, with permanent or removable metal centers are available for every job!

Precision manufactured on latest, modern equipment in the BISON Canton plant — assuring uniform quality.

COMPLETE SERVICE FOR METAL FINISHING

BUFFS • POLISHING WHEELS • COMPOSITIONS • ANODES
HEAT TREATING PRODUCTS • COATED ABRASIVES • CLEANERS
EQUIPMENT AND SUPPLIES

Distributors, jobbers! Territories open! Write for details!

Bison Corporation

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• INDUSTRIAL CHEMICALS •
• ACIDS • SOLVENTS • ALKALIES
WAREHOUSE STOCKS OR TRUCKLOADS DIRECT

PHONE
GL 5-0284

For more data circle 202 on Reader Service Card

MICCRO COATINGS
Make Tough Jobs EASY!

MICCROSOL E-1003 — Today's outstanding heat-cured rack coating. Meets industry's highest standards for corrosion and abrasion resistance.

MICCROSTOP — For extreme accuracy in masking parts for all plating cycles.

MICCROMASK — Provides complete masking protection for hard chromium plating.

MICCROPEEL — A special lacquer that can be peeled easily from parts after all plating cycles.

MICCROWAX — Two waxes widely used for selective stop-off. C-562 for hard chromium; C-600 for high temperature cycles.

MICCROTEX — An air-dry rack coating for all plating cycles. Excellent for patching and repairing.

MICCROTAPE — An extruded tape which provides unexcelled protection for plating racks, and for masking parts prior to selective plating.

MICCROTUBE — Extruded tubing especially suited for use on contact wires, and for selective plating of simple parts.

MICCROLOID — Corrosion-resistant industrial maintenance paint.

• WRITE FOR PARTICULARS ON COMPANY LETTERHEAD

Developed and manufactured by experienced platers

MICCRO Products

MICHIGAN CHROME *and Chemical Company*

8615 Grinnell Avenue • Detroit 13, Michigan

For more data circle **203** on Reader Service Card

a radiating area of 2⅝ by 6 inches. The modular transducer design facilitates a wide choice of arrangements, including flush transducer banks, focusing and diverging. Ultrasonic energy of the proper intensity can be applied as required by the shape of the part.

The immersible transducers lend themselves readily to installation on completely conveyorized machines.

Descriptive literature is available from Branson Ultrasonic Co., 37 Brown House Road, Stamford, Conn.

For more data circle 9 on Reader Service Card

★ ★ ★

Cadmium Additives

R. O. Hull & Co., Inc., 1306 Parsons Ct., Rocky River 16, Ohio, has announced four products formulated to improve cadmium deposits.

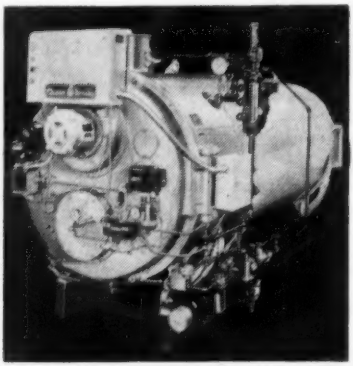
Super XL Cadmium Brightener (liquid or powder) is an addition agent for cyanide cadmium plating. According to the manufacturer, it aids in producing a clear, bright barrel or still cadmium plate. Only small amounts are needed in the bath. In addition to improving brightness, Super XL is said to minimize usage by producing a more uniform deposit.

Cad-Sol is a pure, concentrated solution of cadmium cyanide for make-up or maintenance of cadmium plating baths, without dissolving cadmium oxide.

Cadip is added to the final hot water rinse to speed drying and prevent discoloration of cadmium deposits, espe-

To page 100→

PROTECTS this BOILER better than any other finish!



Sicon® SILICONE

HEAT RESISTANT FINISH

● SICON gray and SICON Maroon are used on all models of the "CB" line of packaged boilers, manufactured by Cleaver-Brooks, Milwaukee. SICON retains its color and gloss in the range of 500° F., far above the hottest skin temperatures of the boiler.

SICON is easy to apply—one sprayed on coat does the job. It dries fast, and protects the surface for the life of the unit. If your product generates sustained heat you need SICON, *the finish that has stood the test of heat and time.* Write today!

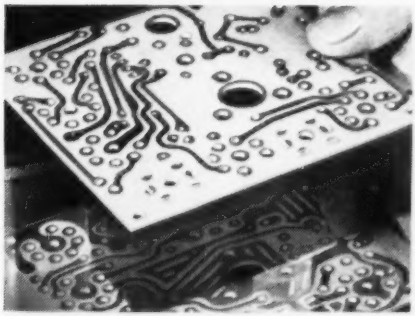
MIDLAND *Industrial Finishes Co.*

Dept. J-6, WAUKEGAN, ILLINOIS

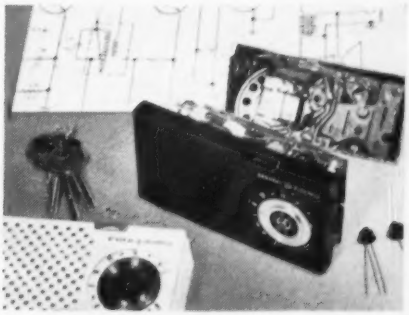
ENAMELS
LACQUERS
SYNTHETICS
VARNISHES

For more data circle 204 on Reader Service Card

G. E. plates circuits with "Plus-4" Anodes



G-E "Thru-Con" Printed Circuit Boards offer positive connection through the holes without staking pins. Patterns on both sides if needed. Printed circuitry cuts assembly time; cuts product bulk, weight; reduces inspection time.



This transistorized portable radio features a full printed circuit using a General Electric "Thru-Con" Board. Combining other advances in electronics with the printed circuit makes possible sweeping changes in size, weight, and styling.

A new 75-foot automatic acid-copper electroplating tank is the key to the highly mechanized production system in which General Electric will produce some 6,000,000 of its "Thru-Con"—additive-type printed-circuit boards for everything from transistorized portable radios to street light controls.

Plastic strips, with wiring patterns printed in a microscopic layer of silver as a conductive coating for acid-copper plating, run through the tank several thousand at one time, in racks suspended from a conveyor.

The tank holds 850 3½" x 1½" x 42" long oval anodes in three parallel rows. It is filled with a standard 30/7 copper sulfate solution. Current input is 25,000 amps—15,000 amps in series through the outside rows and 10,000 amps through the center row.

General Electric tested several different kinds of anodes—is now using ANACONDA "Plus-4" (Phosphorized Copper) Anodes. These are the comments on their performance:

1. No sludging.
2. Minimum copper build-up in solution. Better than with any other anode tried.
3. Smooth, heavy deposit.
4. There is a greater cathode deposit. Scrap losses are considerably under those anticipated.
5. Throwing power is excellent, producing uniform plating, even inside holes in the plastic strips—for positive electrical connections.

See for yourself how ANACONDA "Plus-4" Anodes can simplify acid-copper electroplating, reduce your costs. Write for information on how you can get a test quantity to supply one tank. Address: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 56142

"Plus-4" Anodes

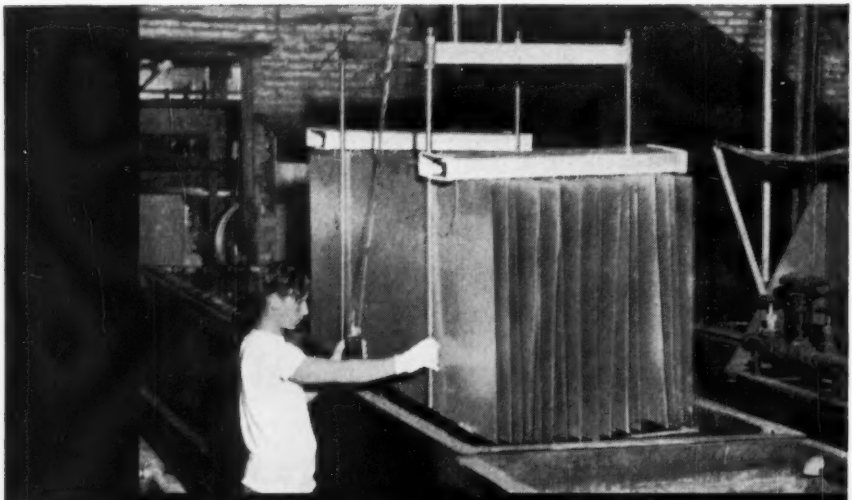
(Phosphorized Copper)

A product of **ANACONDA**®

Made by The American Brass Company

For use under U. S. Patent No. 2,689,216

For more data circle 205 on Reader Service Card



CLEAN ALUMINUM
Safely and at Lower Cost
with INTERNATIONAL CLEANER 1339

Noted for its high detergency, International Cleaner 1339 removes shop oils and contaminants from aluminum—without etching or corroding the metal. In fact, this free-rinsing, soak tank cleaner meets the anti-corrosion requirements of government specifications such as Army-Air Force Spec. #14128-A.

There's an International Cleaning Compound that will meet your needs *exactly* and at amazingly low cost. Trial quantities of any International Compound will be supplied on request. Write for information.

I.C.C. *Specialists in Cleaners and Coolants for Over 50 Years*

INTERNATIONAL CHEMICAL CO.

2628 N. MASCHER STREET • PHILADELPHIA 33, PA.

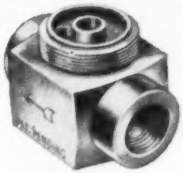
For more data circle **206** on Reader Service Card

NEW-REVOLUTIONARY STEAM TRAP

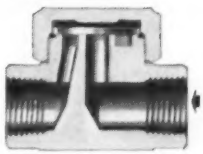
1. A CAP

2. A DISC

3. A BODY



THAT'S ALL!



Only moving part, a hardened Solid Stainless Steel Disc, practically wear-proof!

2134-F

defeats wear-corrosion!

This **NEW** Sarco Thermodynamic Steam Trap virtually eliminates maintenance. Stainless steel throughout. Only one moving part.

No valve-closing mechanisms to wear or stick. Not affected by superheat, waterhammer, vibration, corrosive condensate. No critical clearances to choke. No gaskets to leak. Same trap for all loads and pressures 10-600 psi.

Write for bulletin 255-44 or a TD trap for a 60-day trial installation. Specify size and application.

SARCO COMPANY, INC.
EMPIRE STATE BLDG., N.Y. 1, N.Y.

For more data circle **207** on Reader Service Card

cially upon baking to relieve hydrogen.

Rodip CD-3 and CD-4 are single, short-dip chromate post-plating treatments without leach, for long-lasting, brilliant cadmium with good corrosion protection. CD-3 is formulated especially for use in automatic tank or barrel installations and CD-4 is for manual operations.

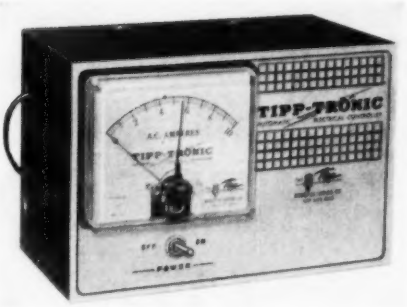
For more data circle 10 on Reader Service Card

★ ★ ★

Conveyor Overload Protector

An automatic safety controller which provides warning and prevents damage from abnormal load conditions on electrically driven conveyor systems has been announced by the Tipp Manufacturing Co., Tipp City, Ohio.

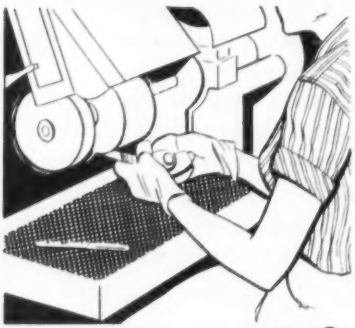
The electro-mechanical device called the Tipp-Tronic eliminates the need for shear pins, slip clutches and other mechanical safety devices often used on conveyors where they and/or adjacent equipment may be damaged by accidental jam-ups. The unit also affords protection against extreme overload. It protects electric motors.



Tipp-Tronic automatically protects conveyor from damage due to overload or jamming

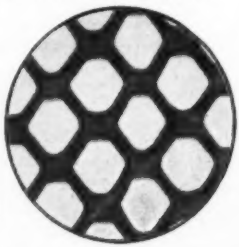
PROTECT FINE PLATED SURFACES

with **RP** *Neotex*



Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP *Neotex*



RESEARCH PRODUCTS CORPORATION

Dept. 76, Madison 10, Wis.

For more data circle 208 on Reader Service Card

For the newest in coated abrasives . . . watch BEHR-MANNING!

A natural for polishing intricately shaped casting surfaces.

Favorites for bringing-up superior finishes in fast time.

Tops for removing flash from difficult inside contours.

Faster, easier way to finish non-ferrous castings

With these BEHR-MANNING Coated Abrasive Belts on the job, you'll come up with consistently better finishes every time. For example, this operator (above) turns out a steady flow of cast aluminum parts in record-breaking time.

Foundries everywhere are finding BEHR-MANNING Coated Abrasive Belts the answer for superior finishes at today's increased production demands. Try them yourself, in your foundry or at a nearby BEHR-MANNING Application Room. A BEHR-MANNING Representative will gladly demonstrate. Call him today, or write Behr-Manning, Troy, N. Y., Dept. PF-10.

In Canada: Behr Manning (Canada) Ltd., Brantford
For Export: Norton Behr Manning Overseas Inc., New Rochelle, N. Y., U. S. A.

P-2

BEHR-MANNING Co.
a division of NORTON COMPANY
NORTON ABRASIVES

For more data circle 209 on Reader Service Card

A self-contained package that combines all the features of fuses, circuit breakers, ammeters and tong testers, the unit instantly and automatically shuts off the conveyor system at any predetermined load setting. It may also be set up to give warning or alarm of impending trouble before the shut-off stage is reached.

The Tipp-Tronic, already being supplied by Tipp for use with its own cable conveyor systems, is also available for use with other types of electrically driven conveyors.

For more data circle **11** on Reader Service Card

★ ★ ★

Rust Preventive

"Blue Ice" is the name given to a synthetic compound recently developed by the Park Chemical Company as a light machining and general purpose grinding compound. It can be used on all common metals and alloys and is completely harmless to machines and machine parts, it is stated.

Excellent rust proofing is provided by this compound. This has led to its application as a rust preventive rinse following heat treatment, pickling, and power washing. Composed of a combination of alkaline detergents and chemical rust inhibitors, it functions effectively at dilutions of 40-1 to 200-1.

The compound is stable for an indefinite period and will never become rancid, it is stated.

INDUSTRIAL OVENS

Ovens Engineered and Designed to meet your particular plant layout and process requirements. Insulated Panel construction on Structural Steel Framing. Designs include: Compartment Type; Horizontal Type; Vertical Type; and "A" Type; floor or overhead mounted with continuous or intermittent conveying—Indoor, Outdoor, or Roof Installations.

For Bulletins and Quotations, write to:

NEWCOMB-DETROIT

5761 RUSSELL ST. • DETROIT 11, MICH.

For more data circle **210** on Reader Service Card

New!...TUBULAR FILTERS
By INDUSTRIAL

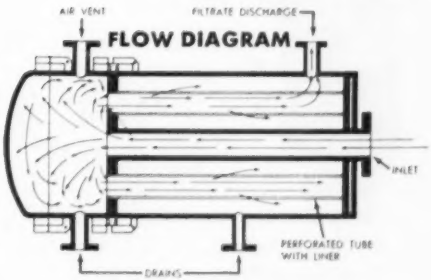
FLOW FROM INSIDE TUBE OFFERS NEW CONVENIENCE

- ★ Unequaled simplicity of maintenance.
- ★ Solids can be recovered in dry form.
- ★ Liners are easy to replace and inexpensive.
- ★ Ideal for intermittent or continuous operation.
- ★ Chamber can be emptied without losing cake.
- ★ No unfiltered "heel."
- ★ Can be used with or without pre-coat.
- ★ Ideal for polishing . . . as a trap filter . . . and as a scavenger for larger filters.

NEW SIMPLIFIED OPERATION

The filter is prepared for use by simply rolling flat sheets of filter paper and inserting them in the tubes, which are designed to force the paper snugly against the tube wall.

EASY TO CLEAN . . . Filter papers are simply withdrawn and replaced. Even the tubes are easy to remove, held in place by a simple rubber O-Ring. Except for the cover there are no nuts and bolts to handle.



FOR FULL DETAILS
WRITE FOR BULLETIN 123-1155

Industrial
INDUSTRIAL
FILTER & PUMP MFG. CO.
5904 OGDEN AVENUE • CHICAGO 50, ILLINOIS

For more data circle **211** on Reader Service Card

Blue Ice is compatible with all types of soluble grinding and cutting compounds. It is odorless, fireproof in storage, transparent, and is not damaged by freezing. For further information, write the Park Chemical Co., 8074 Military Ave., Detroit 4, Mich.

For more data circle 12 on Reader Service Card

Speckled Paint Finish

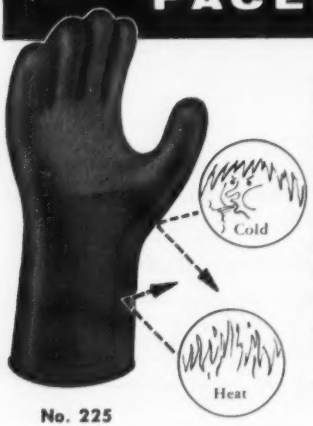
A coating that dries in a variety of two-color speckled patterns in various shades has been announced by Forman-Ford and Co., Minneapolis, Minn. It may be applied by spray or roller.

The speckled effect is produced by minute particles floating in the paint which might be likened to miniature tadpoles. These particles have large "heads," and smaller "tails." The heads are composed mainly of aluminum pigment—the tails of resins and solvents. By a newly - developed process, the heads of these particles are made nonpolar, which means they repel each other. The tails, on the other hand, attract other tails.

The product was developed by Walter Lox, director of new products research for Forman-Ford and Co., Minneapolis, Minn. He worked closely with Reynolds Metals Company, Louisville, Ky., supplier of the non-leafing aluminum pigment, a necessary ingredient.

The process includes a base coat and a finish coat. Size of the speckles is varied by the time the base coat is allow-

New "Hot 'N Cold" Stanzoil
PACEMAKER



No. 225

Features two 8 oz. shells with face-to-face napping for extreme insulation, coated with oil, acid, caustic and solvent resistant neoprene. Inner lining double napped and bar tacked at finger tips. Non-ravel lock stitch binding on gauntlet. *PIONEER will help you select the right glove for your job from the complete PIONEER line.*

The PIONEER Rubber Co.
Attn: Hand Protection Clinic
285 Tiffin Road
Willard, Ohio, U.S.A.

Pioneers in Hand Protection
For Over 35 Years

Please send me:

- ☐ The name of my nearest PIONEER Glove Distributor.
- ☐ 1956-57 PIONEER Industrial Glove Catalog.
- ☐ Your glove recommendation for job described in enclosed letter.

Firm_____

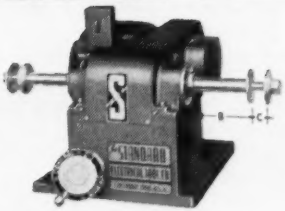
Address_____

City_____ Zone____ State_____

Signed_____

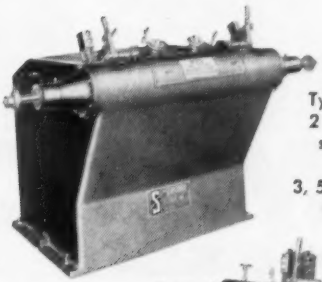
For more data circle 212 on Reader Service Card

FOR FINISHING TO A "STANDARD"



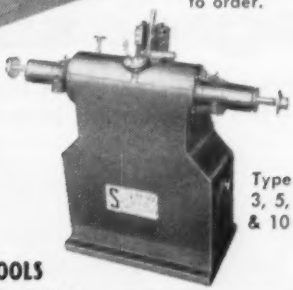
BVB 1 HP
Bench Model

Standard Buffers and Polishers are superbly engineered for top production. "Speedial" control lets you choose speed between 1500 and 3000 RPM *instantly*. Buffing, polishing, coloring to a uniform finish by maintenance of constant peripheral speed.



Type R2V with 2 independent spindles and motors. 3, 5, 7½ & 10 HP. Larger sizes to order.

HALLMARK OF METALWORKING THROUGHOUT THE WORLD



Type RV 3, 5, 7½ & 10 HP.

the STANDARD electrical tool co.

BUFFERS - POLISHERS and MACHINE TOOLS

2518 RIVER ROAD • CINCINNATI 4, OHIO

WRITE FOR CATALOGUE

INFINITELY VARIABLE SPEED, PROPER SPEED, MOTOR DRIVEN

BUFFERS — POLISHERS

For more data circle **213** on Reader Service Card

ed to dry. The paint is available in either glossy or semi-glossy finish. It is said to have excellent weathering characteristics.

A special formulation will be made available for painting new metal surfaces, to give maximum corrosion resistance. Distribution of the speckled paint will be under a licensing agreement with major paint manufacturers.
For more data circle **13** on Reader Service Card

★ ★ ★

Water Conditioner

The Packard Manufacturing Company, 222 W. Beaver St., Jacksonville 9, Florida, has announced a water conditioner that eliminates and prevents scale and corrosion in boilers and water systems without the use of chemicals. The device is said to apply nuclear physics principles to water treatment.

Water Conditioner prevents scale, corrosion

The Packard Water Conditioner prevents scale and corrosion by imparting added energy to the atoms of the water solution, the manufacturer states. There are no moving parts.

The Packard Water Conditioner is manufactured in sizes handling from 6.5 to 1,760 g.p.m. for connection with corresponding standard iron pipe sizes ranging from ¾ to 12 inches. Larger sizes are available.
For more data circle **14** on Reader Service Card

★ ★ ★

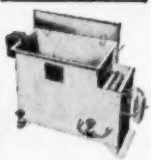
Plastic Coating Process

Announcement of a process for providing corrosion-resistant coatings of

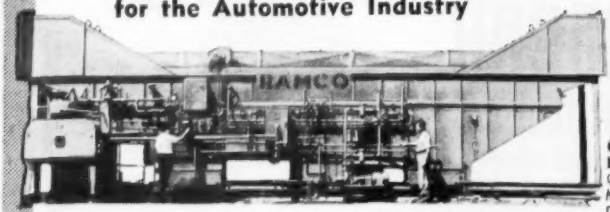
RAMCO degreasers

from Laboratory Units to Giants for the Automotive Industry

ANOTHER RAMCO PRODUCT



LABORATORY DEGREASER



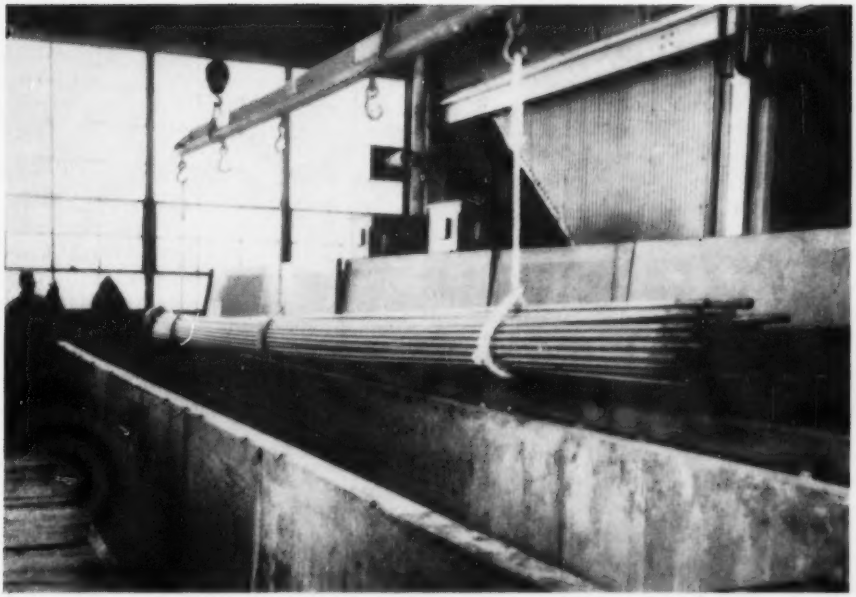
GIANT FORD DEGREASER
Courtesy Ford Motor Car Co., Detroit

Call on our engineering department for the latest in ULTRA-SONIC CLEANING.

Send for FREE CATALOG. Call your nearest Ramco engineer and have your metal cleaning equipment SERVICED AT NO CHARGE.

RAMCO EQUIPMENT CORP. Div. of Randall Mfg. Co., Inc.
811 Edgewater Rd., New York 59, N. Y. • DAyton 3-3900

For more data circle **214** on Reader Service Card



Sawhill Tubular Products reports:

"Thorough cleaning, no etching when we degrease tubing with TRICLENE® D"

"We've bought 'Triclene' D by the tank-wagon load since it first came on the market," says Mr. C. H. Albright, General Purchasing Agent of Sawhill Tubular Products, Inc., Sharon, Pa. "And it's the most efficient solvent we've found for degreasing stainless- and carbon-steel capillary tubing—inside and out.

"In addition to thorough, trouble-free cleaning, 'Triclene' D also makes our next operation—annealing—much easier. Here, any residue on metal surfaces affects the quality of the anneal. After switching to 'Triclene' D, we noticed a healthy reduction in the number of rejects."

Other advantages noted by Sawhill were easier solvent control, steadier pH and no etching on highly polished surfaces. In short, Sawhill had fewer solvent worries.

GET ALL THE FACTS about "Triclene" D and vapor degreasing in this new 42-page booklet. Here you'll see how this rugged solvent is used for all metals and in all industries. Send for your free copy today.

TRICLENE® D
TRICHLORETHYLENE

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department PF-10
Wilmington 98, Delaware

☐ Please send me a copy of your new vapor-degreasing booklet.
☐ Please have your Representative phone for an appointment.

Name_____ Title_____
Company_____
Address_____
City_____ Zone_____ State_____

For more data circle **215** on Reader Service Card

polyethylene, polyfluorocarbons, nylon and other plastics on metallic and dissimilar plastic molded targets, has been announced by the American Agile Corporation, Maple Heights (Cleveland), Ohio.

The fluidized-coating process will enable industry to apply these plastics for on-the-spot corrosion protection when and where needed, in the plant.

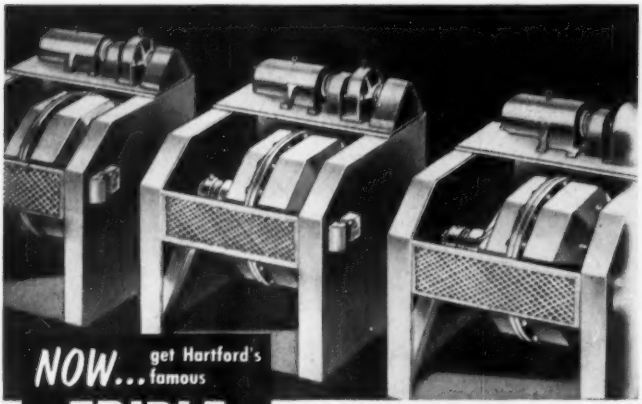
The process involves the use of a Powder Fluidizer, a compact unit consisting of a specially-designed gas distribution system which maintains the plastic powder in a turbulent dense fluid state. The appearance of the fluidized bed closely resembles that of a boiling liquid.

Also available are specially-blended polyethylene coating powders, developed by American Agile, which can also be used with the spraying unit.

The fluidized-coating process provides a uniform coating up to 3/16 inches thick. The target to be coated is first heated to predetermined temperature, then immersed in the fluidized coating powder for from 10 to 15 seconds. It is then replaced in the oven, and allowed to cure for a short period.

The process, at this time, is available for use only in laboratories for coating such items as stirrers, valves, containers, racks, and handling tools, which can be given a firmly-adherent corrosion-proof cladding of resin in a matter of a few minutes.

Within the next few months how-



There's a new look in Hartford's Tumbling Barrels... but underneath you get the famous Triple Action Barrel originated by Hartford and unsurpassed for doing a better job ...faster... at lower cost.

Compare these advantages! The Hartford fully enclosed Model 1956 is extremely compact...requires less floor space than most enclosed barrels. With Hartford the power unit is on top, where it belongs for long life, cleanliness and ease of maintenance. Barrel is mounted on rugged "A" frame for maximum strength. Streamlined steel enclosure confines splash and contributes to safe operation. Pivoted front guard opens to permit quick, easy loading and unloading . . . plus easy removal of barrel assembly. Standard power unit has four speed gear shift transmission. Literature and prices promptly furnished.

Hartford

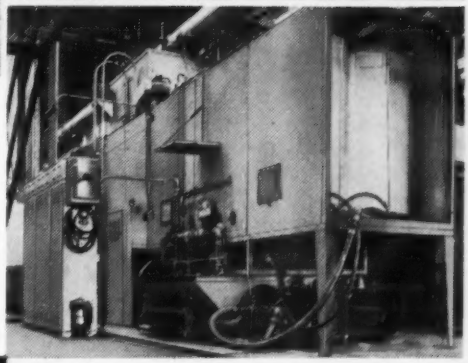
PRECISION BALLS • RETAINERS
BEARINGS • TUMBLING BARRELS

THE HARTFORD STEEL BALL CO., INC.
14 Jefferson Avenue W. Hartford 6, Conn.

For more data circle 216 on Reader Service Card

PROBLEM: Product finishing that is faster, more uniform with less waste, less labor and fewer rejects.

ANSWER: Flow coating system designed by Koch! You will enjoy material savings to 50% . . . elimination of indirect labor . . . improved efficiency. Call Koch!



Pilot flow coating system at a major appliance plant is used as a laboratory for testing the finish applications of appliance parts.

for further facts

read more about Flow Coating in this issue.

WRITE FOR BULLETIN 1F76

GEORGE KOCH SONS, Inc.

EVANSVILLE 4, INDIANA

CHICAGO **DETROIT**

For more data circle **217** on Reader Service Card

ever, as larger coating units are built, applications to industry in general will be possible, it is stated.

For more data circle **15** on Reader Service Card

★ ★ ★

Industrial Batch Oven

An industrial batch oven with the Power-O-Matic control system, which automatically proportions wattage in relation to operating temperature and work load, has been announced by Blue M Electric Co., 138th and Chatham St., Blue Island, Ill.

According to the manufacturer, the Power-O-Matic system requires no auxiliary knobs or switches to set or turn and no additional equipment. The operator merely sets the temperature, and when the temperature is reached, Power-O-Matic goes into action, and minimum wattage is automatically modulated in relation to temperature and work load rather than cycling a

Blue M Industrial Batch Oven: better control

Another fine product made finer . . .

with the PARAMOUNT "Finishing Touch"

"In jewelry merchandising, fine finishes are all important in catching customers' eyes," reports Shields, Inc., world-famous manufacturer of fine men's jewelry. "We have found that Paramount Felt Wheels can economically produce finishes which meet our standards — *and the customers'*."

Take a tip from Shields, Inc., — make sure the finish on your product is *creating* sales . . . not losing them. Discover how Paramount Felt Wheels can give you better finishes, faster and at less cost.

Call your supply house.

Paramount

Felt Wheels, Bobs, Sheet Felt

Bacon Felt Co.

447 West Water St., Taunton, Mass.

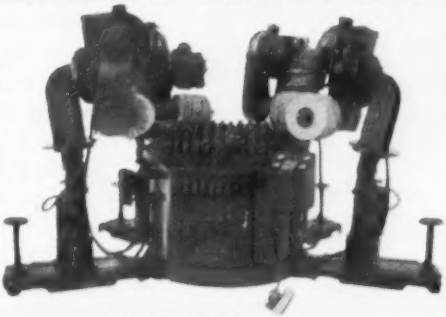
For more data circle **218** on Reader Service Card

"I STILL PREFER MY FOUR-HEADED *PACKER-MATIC*"

Four or more heads on Packer automatics are the answer when polishing, buffing, or deburring production lags in your finishing room.

For handling long production runs, small odd-lot jobs or a mixture of both—Packer-Matics are easily adapted to many change-over setups, produce consistently better finishes in a fraction of hand operation time.

Packer-Matics are designed specifically to perform a multiplicity of jobs with an efficiency that will increase customer satisfaction and profit.



No. 14-45 CONTINUOUS ROTARY

OUR ENGINEERING STAFF INVITES YOUR INQUIRY.

PACKER-MATIC

AUTOMATIC MACHINES FOR BUFFING • POLISHING • DEBURRING

THE PACKER MACHINE COMPANY • MERIDEN, CONNECTICUT

For more data circle **219** on Reader Service Card

fixed wattage "on" and "off," as needed.

Several sizes of Blue M industrial batch ovens are available, each with triple side walls constructed of heavy gauge steel. They have 4 inches of fiberglas insulation and a blow-out relief panel. Temperature range is from 100 to 600 deg. F.

For more data circle **16** on Reader Service Card

Zinc Brightener

A grain refining agent used to produce a full bright zinc deposit from cyanide zinc plating baths is available from Promat Div., Poor & Co., Dept. PF-10, 851 S. Market St., Waukegan, Ill.

Called ZB-2, this material is designed to aid in producing better striking power and coverage. Higher current densities and elevated temperatures do not affect this brightener, the manufacturer states. The process meets all military requirements for zinc deposits and supplementary conversion coatings can be used to extend the corrosion resistance of the zinc deposit.

The material is suitable for use in barrel, still, semi and full automatic plating.

For more data circle **17** on Reader Service Card

★ ★ ★

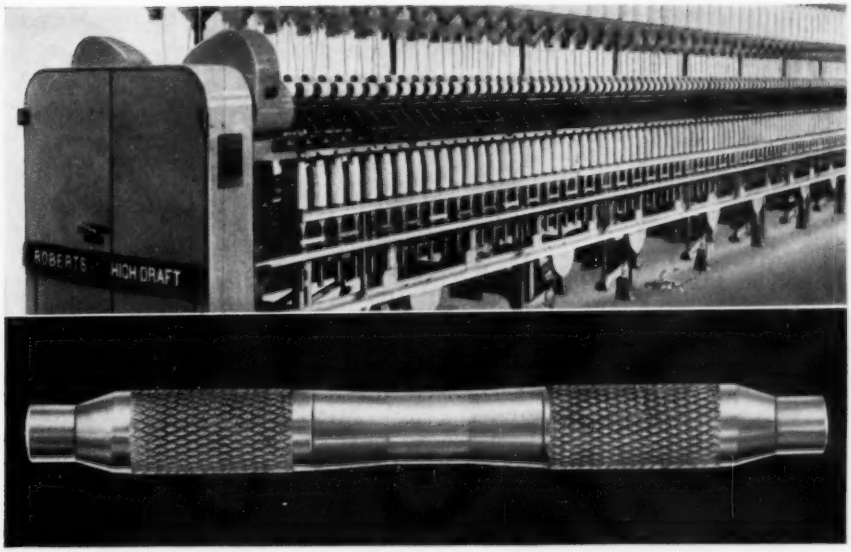
Tank Lining

Amercoat Corporation, South Gate, Calif., has introduced a vinyl sheet tank lining that is molded under heat and high pressure to produce a lining of maximum density and corrosion resistance. This technique is said to produce a smooth, dense membrane that

To page 116→

YOU ARE NEVER FULLY DRESSED UNTIL YOU WEAR A SMILE!
ALKALI IKE
. . and you will never be fully satisfied with your cleaning of ferrous and non-ferrous metals until you have investigated — APEX "761" CLEANING COMPOUND . . moderately alkaline, free rinsing, coupled with powerful emulsifiers for quick removal of impacted soils, such as buffing compounds.
May Our Field Representatives Be of Service?
Apex ALKALI PRODUCTS CO.
A complete line of Cleaning Compounds for the Metal Finishing Industry
Main and Rector Streets • Philadelphia 27, Pa. • IV 3-3939
SYRACUSE BOSTON DETROIT ATLANTA PITTSBURGH WEST HARTFORD

For more data circle **220** on Reader Service Card



Roberts Co., internationally known textile machine maker

Improves finishes to 10 RMS... slashes costs $35.84 per thousand "top rolls"

Roberts Company of Sanford, N. C., specialists in spinning frames, was using polishing wheels and wire brushes to finish hardened steel top rolls — dry bearing components of its textile spinning machines. Costs were a high $39.40 per thousand finished rolls and the best finish obtainable by this method was an often unsatisfactory 50 to 60 micro inch.

A HONITE Field Engineer suggested that this company switch to the HONITE Barrel Finishing Method, using HONITE Compounds and HONITE Chips. The results: Costs per thousand finished top rolls immediately dropped to a low $3.56 . . . finishes improved to a high 10 micro inch *and* the life and lubrication requirements of the finished rolls increased a full 100%.

You can cut costs with the HONITE Barrel Finishing Method, too. Write today for full facts!

Honite® BRAND

Made in U.S.A.
MINNESOTA MINING AND MFG. CO.
General Offices:
St. Paul 6, Minn. In Canada: P.O. Box 757, London, Ontario. Export Sales Office: 99 Park Avenue, New York City.

3M COMPANY

Minnesota Mining and Manufacturing Co.
Dept. FI-106, St. Paul 6, Minn.

☐ I'd like to talk with a HONITE Field Engineer
☐ Send me FREE copy of booklet "Facts and Figures Report on HONITE Barrel Finishing"

Name_____ Title_____
Company_____
Address_____
City_____ Zone____ State_____

For more data circle **221** on Reader Service Card

6 solutions for your

protection problems...

EXON

SOLUTION RESINS

Protective coatings take many forms to fill many needs . . . whatever you need, you will find your answer among the six solution resins of Firestone Exon.

Each resin is engineered specifically for the individual requirements of each application. Their properties vary. Some strip clean in seconds, some hold fast for years.

But all of them spray smoothly, dissolve quickly in appropriate solvents, resist chemicals, abrasion, corrosion and weather to an unusual degree.

Exon solution resins are industry's primary source of dependable, low cost, enduring protection, for they are used extensively by makers of all types of coatings. They are 6 sound reasons why industry looks to Exon for engineered answers to its needs.

• • • ★ • • •

EXON 450—Ideal for strip coatings. Good solubility, tensile strength and durability.

EXON 461—A unique fluorine-containing resin with high solubility, unusual chemical resistance, heat stability, wearability.

EXON 470—Excellent adhesion to metals, alkyd and vinyl surfaces. Compatible with wide range of drying oils, alkyds, phenolics, melamines. High solubility in inexpensive solvents.

EXON 471—Excellent weatherability and durability in a protective coating. Corrosion resistant. No measurable change after sun-lamp exposure for 360 hours as 1 mil film.

EXON 481 — Makes possible colorful, abrasion-proof, washable coatings that resist fading or cracking.

EXON 485—For superior strip coatings. Lower viscosity makes application easier and shelf-life better. Good clarity.

Firestone

For details that will interest you in particular, call or write:

CHEMICAL SALES DIVISION

FIRESTONE PLASTICS COMPANY, DEPT. 664N, POTTSTOWN, PA.

A DIVISION OF THE FIRESTONE TIRE & RUBBER CO.

For more data circle 222 on Reader Service Card

is impervious to most plating and pickling solutions, acids and alkalies.

Called Amer-Plate, the lining is bonded to the tank with Amer-Plate 20-Y Adhesive. This product bonds the lining to the tank so that once it has set, the lining is almost impossible to remove, it is stated. Amer-Plate linings are said to withstand temperatures up to 160 deg. F. If damaged, the lining can be repaired easily on the job.

Additional technical data is available from the Amercoat Corp., Dept. E1, 4809 Firestone Blvd., South Gate, California.

For more data circle **18** on Reader Service Card

★ ★ ★

Skin Cleanser

A waterless lotion for cleaning dirt and grime from skin while preventing dermatitis and chafing has been announced by Hammons Products, Inc., Fort Wayne, Indiana.

Hammons Waterless Hand Soap: fast cleanup

A liquid cleanser, it is said to remove paint, grease, and other types of stubborn dirt from hands in minimum time. Ingredients used in formulating this lotion are helpful in preventing dermatitis and chapped hands, the manufacturer states. Packaging in an unbreak-

Rhodium Plating for jewelry offers the advantages of whiteness, lustre and corrosion resistance . . .

For electrical and other applications: protection from corrosion in air or unusual conditions . . . Particularly recommended for printed circuits and contact surfaces . . .

Can be applied to many surfaces from less than one to one hundred milligrams per square inch . . .

Consult our staff, without obligation, about your specific plating problems.

SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE, MOUNT VERNON, N. Y.

For more data circle **223** on Reader Service Card

PARLON® STAYS ON

Ready for 'Stacking' in Six Minutes

QUICK DIP, QUICK DRY—These axle housings have been dip-coated with a Parlon-based casting sealer manufactured by Tousey Varnish Co., Chicago, Ill. Housings were submerged in dip-tank, withdrawn by hoist and returned to conveyor line which moved past bank of drying lights. Dipping cycle took 20 seconds; housings were dry enough for handling after six minutes.

Fast-dry time is only one of the many reasons that manufacturers are turning to Parlon-Synthetic finishes to meet their finishing requirements.

Parlon casting sealers, for example, have been developed to take advantage of the unique characteristics of this finish. The higher solids and less expensive reducer employed when a Parlon-alkyd formulation is used results in substantial savings in over-all sealer costs. These Parlon sealers also provide a thicker, more uniform film coverage. And Parlon's outstanding resistance to weathering protects against corrosion even when parts are stored outside for long periods.

Parlon-Synthetic coatings are now available to meet all types of finishing requirements—no matter how specialized. For further technical information on a Parlon-Synthetic that is suited to your application, call or write your regular supplier of quality paint finishes or write directly to Hercules.

Cellulose Products Department
HERCULES POWDER COMPANY
INCORPORATED
927 Market St., Wilmington 99, Del.

CR56-3

PARLON (CHLORINATED RUBBER) PAINTS ARE AVAILABLE FROM 400 MANUFACTURERS UNDER THEIR OWN BRAND NAMES

For more data circle **224** on Reader Service Card

HAVEG News

Wherever CORROSION RESISTANCE is a Factor

LIGHTWEIGHT POLYESTER GLASS TANKS OFFER UNUSUAL ADVANTAGES

Production economies of new, lightweight polyester glass tanks and other process equipment permit installation costs considerably below those for conventional lead or rubber-lined, stainless steel—even mild steel equipment in many instances! Haveg plastic tanks provide bonus savings in reduced steel requirements for foundations and supports—easier installation and longer, maintenance-free service!

These new tanks augment the complete Haveg line of plastic tanks for every process application where superior corrosion resistance is required. Haveg plastic tanks and equipment offer exceptional resistance to acids, salts, alkalies, and various oxidizing agents—at operating temperatures up to 350° F. Bulletin C-13 gives details of Haveg corrosion resistant equipment for process use; Bulletin G-10 describes Haveg polyester glass equipment . . . or ask to have a qualified Haveg corrosion control engineer call, without obligation. His recommendations can be the start of major savings!

H-604R

HAVEG PLASTICS OF TOMORROW
SOLVE YOUR CORROSION PROBLEMS TODAY

HAVEG INDUSTRIES, INC.

914 GREENBANK ROAD
WILMINGTON 8, DELAWARE

For more data circle 225 on Reader Service Card

able "squeeze-type" polyethylene container makes the material easier and safer to use in the plant. No water rinse is necessary.

It is available packaged in 55-gallon drums, 30-gallon drums, 5-gallon cans, one-gallon jugs and quarts. One-gallon and quart wall-mounting dispensers are also available.

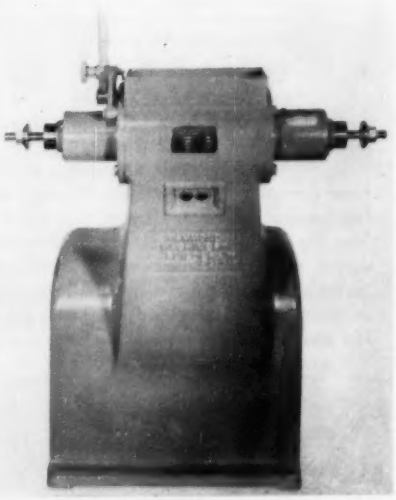
For more data circle **19** on Reader Service Card

★ ★ ★

Polishing Lathe

A high-speed polishing lathe with shortened spindle, for hand finishing small parts such as automotive and aircraft parts and jet blades, has been announced by Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Michigan.

Designated as Model 5-ROL, this lathe has a 5-h.p. motor and speeds up to 6500 r.p.m.



Hammond Model 5-ROL High Speed Polishing Lathe — for hand finishing of small parts

NEW . . . from Wyandotte

Expray-AP

An all-purpose, rust-inhibiting metal cleaner for spray washers

Here's a new alkaline spray cleaner that fills a definite need in metal cleaning. Not just an improved version of cleaners already on the market, Wyandotte's EXPRAY-AP is unique . . . research-developed, proved in use. Here are some typical spray-cleaning applications:

Steel parts — EXPRAY-AP is excellent for removing fabricating soils and preventing rust — even cold in a one-stage washer.

Zinc die castings — EXPRAY-AP is nonetching and provides protection against staining.

Cast-iron parts — EXPRAY-AP removes chips and dust, prevents rust on machined surfaces.

Glass — EXPRAY-AP eliminates streaking, removes pitch, rouge, and oils from lenses and other glass products.

If you're looking for ways to improve your metal-cleaning or finishing operations, call in your Wyandotte representative. Let him show you what EXPRAY-AP can do in *your* plant. Or clip and mail coupon today! *Wyandotte Chemicals Corporation, Wyandotte, Mich. Also Los Nietos, California. Offices in principal cities.*

EXPRAY-AP gives you all these benefits — *and more!*

Powerful cleaning action — contains free-rinsing synthetic detergents!

Easy to use — noncaustic, nondusty, free-flowing!

Low-foaming — even at high concentrations and in high-pressure washers!

Prevents scale — even in hardest water!

Prevents rust — contains its own rust inhibitor!

Economical — lower use-cost and reduced equipment maintenance!

Wyandotte CHEMICALS

J. B. FORD DIVISION

WYANDOTTE CHEMICALS CORP.
Wyandotte, Michigan

Please send me further information and technical data on EXPRAY-AP.

Name _____

Company _____

Address _____

City _____ Zone ____ State _____

For more data circle 226 on Reader Service Card

This model has a dynamically balanced, ball bearing spindle, with either flat or multi-V-belt drive. Drive belts are easily removable and can be replaced without removing or exposing bearings. The unit has a combination brake and switch, operated by a single lever for instantly stopping lathe spindle and cutting off motor current before brake is applied. The brake also locks the spindle for wheel removal.

For more data circle **20** on Reader Service Card

Silver Plating Process

The Silvrex Bright Silver Plating Process, introduced by Sel-Rex Precious Metals, Inc., Belleville, N. J., is said to give a mirror bright finish directly from the bath through a complete range from flash to extra heavy deposits.

Sel-Rex states that other features of the process are: hard (Brinnell 135) and ductile deposits; operates at room temperature; less fumes; less tendency toward bath decomposition; noncritical operation and control; operable in a wide range of current densities—from 10 to 40 a.s.f.; and good throwing power, affording more uniform thickness of plating even in "blind holes" and crevices.

Full information and technical instructions for the Sel-Rex Silvrex Bright Silver Plating Process are available from Sel-Rex Precious Metals, Inc., 229 Main St., Belleville 9, N. J.

For more data circle **21** on Reader Service Card

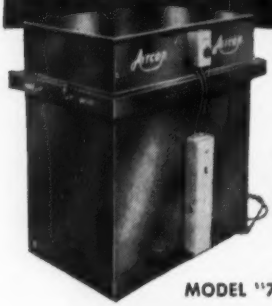
★ ★ ★

Stripper

R & P Stripper No. 27, a concentrated alkaline rust and paint re-

Aircon

VAPOR DEGREASERS



Standard or Custom Designed to suit your needs

MODEL "75"

Recently added to our line of vapor degreasers is the new Aircon Model 75, suitable for both large and small plants where an economical, permanent installation is desired, either for continual operation or as needed. This unit fills the gap between smaller, portable vapor degreasers and the larger higher capacity degreasers.

A working area 24" wide x 40" long x 24" high, combined with a fast cleaning cycle permits a load capacity in excess of 750 lbs. of steel per hour. The Model 75 is equipped with a water control safety valve which prohibits operation of the machine if the water supply is inadequate. Lists at $625 FOB, complete with motor pump and spray equipment.

Write today for information on the Aircon Vapor Degreaser to fit your requirements. We are designers and engineers of special degreasing equipment. Consult us on your degreasing problems.

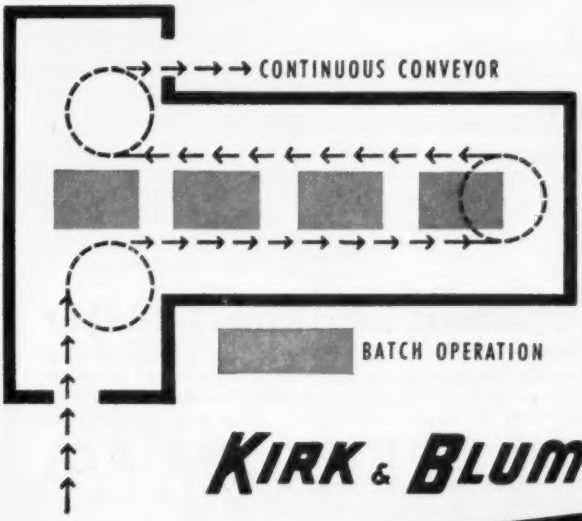
Armstrong & White

CHESWICK, PENNSYLVANIA

For more data circle **227** on Reader Service Card

Oven highway runs through parking lot

This KIRK & BLUM oven installation features a unique dual arrangement whereby both batch and continuous conveyor facilities may be used separately or jointly.



Batch operation is used to dry out fillers used to finish machine tool castings, and to bake the fine finish. Simultaneously, the conveyor runs through a wide variety of small painted parts used on these machine tools.

Recirculation and adjustable duct openings assures uniform temperature throughout — essential in the dual-purpose design.

The steam-heated oven has a normal working temperature of 250° F. with 125 lbs. steam. Steam equipment is located in an integral housing above the oven.

Whatever your oven needs, consult KIRK & BLUM. Write for new "Ovens for Industry" catalog. The Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

KIRK & BLUM

OVENS FOR INDUSTRY

For more data circle 228 on Reader Service Card

mover, has been developed by the Metasurf Corporation, 12830 Eaton Ave., Detroit 27, Mich.

This stripper is said to remove paint, phosphate coatings, rust, oil and other soils in a "one step" operation. It may be used in ordinary mild steel equipment. The solution does not give off obnoxious corrosive fumes, it is stated.

For more data circle **22** on Reader Service Card

★ ★ ★

Gold Plater

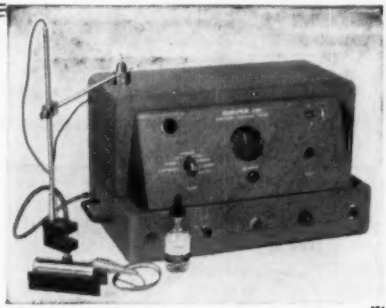
Ramyr Manufacturing Co., 1624 East First St., Los Angeles 33, Calif., has announced a completely self-contained gold plating unit including d.c. power supply and a double wall stainless steel tank. The power supply has stepless voltage control, large meters and a timer to ensure accurate plating.

Ramyr Self-Contained Gold Plating Unit

The double wall tank unit is heated with thermostatically controlled sealed contact heaters.

A cathode rod agitator is incorpo-

Be sure of your
PLATING
THICKNESS
with the



KOCOUR Electronic Thickness Tester

There's no room for guessing plating thickness when you can have accurate readings quickly. The Kocour Electronic Thickness Tester determines the thickness of chromium, silver, tin, cadmium, zinc, brass, copper, nickel, lead, and other plating. Readings are direct . . . accuracy 90-95%. Write for further information . . . no cost, no obligation.

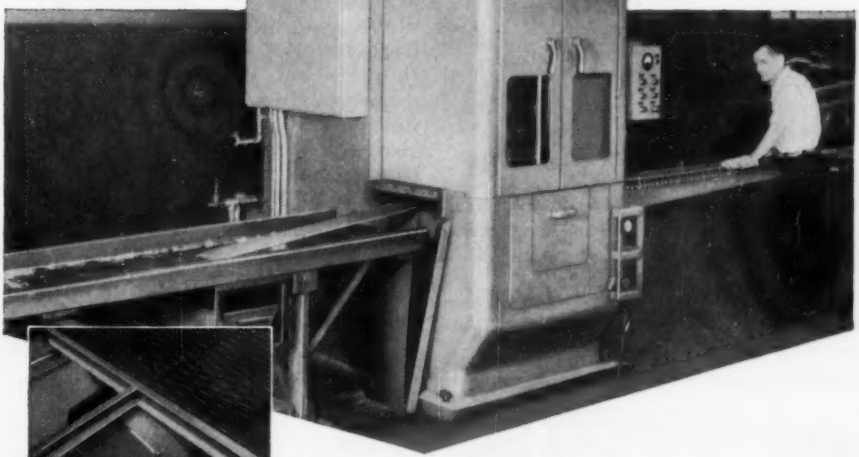
FREE! Get your reprint of "THICKNESS of ELECTRODEPOSITED COATINGS BY THE ANODIC SOLUTION METHOD" by C. F. Walte.

KOCOUR CO.
4814 S. St. Louis Ave.
CHICAGO 32, ILLINOIS

For more data circle **229** on Reader Service Card

MURRAY WAY

MICRO-POLISH strip grinding boosts output over 600 percent for Michigan manufacturer



The New Murray-Way rotary filter which efficiently reclaims coolant on this operation. Permanent filtering media saves the cost of this equipment in a short time.

- ★ Assures Product Uniformity
- ★ Cuts Material Loss and Scrap
- ★ Eliminates Down-time
- ★ Replaces Two Expensive Hand Operations
- ★ Facilitates Subsequent Operations
- ★ Improves Product Appearance
- ★ Eliminates Dust and Mess
- ★ Pays For Itself

Murray-Way's Automatic Equipment, thorough experience and expert engineering can save YOU money on YOUR polishing, buffing, grinding or filtering operations. Why not give us a call . . . JOrdan 4-6890 Detroit, or write for our complete, illustrated Micro-Polish Brochure.

MURRAY WAY

MURRAY-WAY CORPORATION

P. O. BOX 180, MAPLE ROAD EAST + BIRMINGHAM, MICH.

Polishing, Buffing, Grinding, Filtering Equipment that automatically cuts your costs

For more data circle **230** on Reader Service Card

rated for uniform heavy deposits on industrial parts.

This unit was designed for gold plating of printed circuits and other industrial components.

For more data circle **23** on Reader Service Card

★ ★ ★

Curved-Bar Buffing Compositions

Schaffner Mfg. Company, Schaffner Center, Emsworth, Pittsburgh 2, Pa., has announced curved-bar buffing compositions for use in curve bar applicators. These bars are available in tripoli, stainless, lime, or coloring compositions. A full range of cutting and coloring grades is available.

The bars are 2 inches thick, 4 inches wide, and are on an 8-inch radius.

For more data circle **24** on Reader Service Card

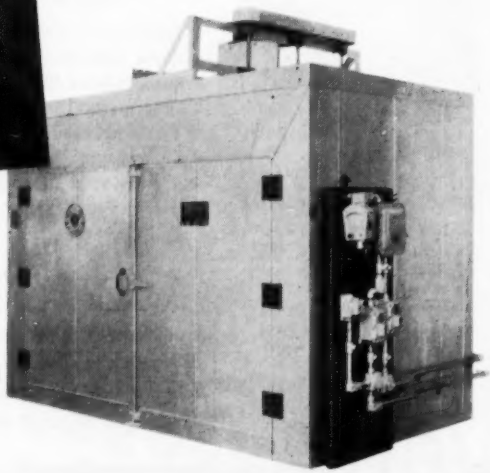
Spray Gun for Viscous Materials

A specially-designed one-piece body "Muff Gun" has been introduced by Black Manufacturing Co., Livingston, N. J., to handle heavy semi-solids by spray application.

Black Spray Gun

The unit is drop-forged, heat-treated aluminum to permit maximum operational facility with high-viscosity hard-to-handle materials. One-piece construction allows smooth flow of materials and assures correct alignment of Fluid Needle and Fluid Nozzle. Patented construction of the fluid needle assures positive shut-off. It also

ROCKWELL
Recirculating
OVENS



- Recirculation Heating
- Clean, Uniform, Fast Drying or Baking
- Batch or Conveyor Types
- Electric · Gas · Oil · Steam
- Safety Control Features
- Save Time and Space

Write for Catalog

W. S. Rockwell Company • 2906 Eliot St., Fairfield, Conn.

For more data circle **231** on Reader Service Card

new, fast, ALKALINE *De Ruster* #2

Does not attack ferrous metals

Non toxic

Economical

No hydrogen embrittlement

No dimensional changes

Also removes paints, oils

Alkaline De Ruster No. 2 is the new Mitchell-Bradford non-electrolytic compound for removing rust quickly from ferrous metals. Since it concentrates its action on the rust itself, it produces no dimensional changes yet leaves the surface not only clean but without the tendency to re-rust.

Alkaline De Ruster No. 2 contains no dangerous acids, produces no harmful fumes. This eliminates the risk of hydrogen embrittlement and produces a surface ideal for subsequent finishing processes such as plating, phosphating, black oxidizing, etc. Alkaline De Ruster No. 2 is used in various concentrations in water of 180° to boiling. It is economical, safe to use, completely dependable. Write us about your rust removal problem!

Mitchell-Bradford

MITCHELL-BRADFORD CHEMICAL CO.

WAMPUS LANE MILFORD, CONNECTICUT

QUALITY PRODUCTS OF CHEMICAL RESEARCH

For more data circle 232 on Reader Service Card

automatically compensates for wear.

The standard "Muff-Gun" is equipped with ¼-inch fluid nozzle and is available in two styles: ¾-inch male fluid inlet, ⅜-inch male air inlet; and ½-inch female fluid inlet, ¼-inch male air inlet. It is equipped for internal atomization, round spray.

For more data circle **25** on Reader Service Card

Corrosion-Resistant Coating

A vinyl-based coating for protecting walls, ceilings, floors and equipment exteriors from corrosives, without priming or other special preparation of the surface prior to application, has been announced by Metal & Thermit Corp., Rahway, N. J.

The coating, called Ucilon 1400, is resistant to acids, alkalis, salt solutions and other corrosives. It may be applied directly over old paint without sandblasting and priming the surface. The solvent used in this material has a bland odor, making the paint easier to apply. Good brushability characteristics aid in application.

For more data circle **26** on Reader Service Card

★ ★ ★

Filter Press

Brosites Products Corp., 50 Church St., New York 7, N. Y., has introduced a vertical-plate type filter. It is suitable for filtering plating solutions, lacquers and solvents.

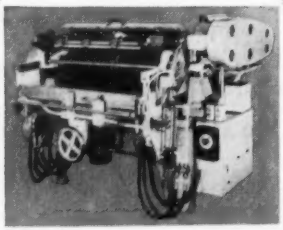
In addition to the advantages of versatility and simplicity of design offered by horizontal plate filters, the Brosites

Offering the Most VERSATILE Line of Surface Finishing Machines

Thanks to customer assistance, our series No. 300 Clair machines are now available to all !

Completely modified without changing any basic principles !

Efficiency of operation is vastly improved !



Not 9' 4" but NOW only 6' in width!

Spindle motors are mounted at inboard rear!

Illustrated is Model No. 304 of the entire 300-series!

Weight of motors removed from main pivot shaft to improve sensitivity of buff float!

Interchangeability of components with all previous Clair models

CLAIR

Let us know YOUR finishing problems for a detailed answer

MANUFACTURING CO., Inc., OLEAN, N.Y.

Offering the Most VERSATILE Line of Surface Finishing Machines

For more data circle **233** on Reader Service Card

filter uses a light-weight metal plate and a special edge sealing design for the plates and frames. Thus plates and frames are easier to move when cleaning and dressing the filter.

Filter paper can be used in the unit without cloth backing. It can be used with or without filter aid and pre-coat.

The Brosites filter is available in various materials of construction, depending upon the application. It can be obtained with areas from 4 to 1,000 square feet of filtering area and with liquid flows from 25 to 30,000 g.p.h. Standard pressure used is 50 p.s.i., but special designs produce up to 500 p.s.i.

Bulletin No. 20, giving complete details on this filter, is available from Brosites Products Corp., 50 Church St., New York 7, N. Y.

For more data circle **27** on Reader Service Card

★ ★ ★

Airless Spray Gun

A paint spray gun designated the Bede T-100 Snap Action Spray Gun is now available for use with all Bede Airless Spray Coating systems. Specifically designed for the Airless Spray Coating Process, it incorporates the following features: a snap action mechanism which opens and closes the needle mechanically in a few hundredths of a second (this design eliminates gun spitting); tungsten carbide tipped needles and needle seats; fluid hose connections located at the base of the handle, eliminating obstructions in front of the operator's hand. These connections swivel within the gun handle, thus increasing maneuverability; gun body entirely insulated; the use of a frictionless needle actuating mechanism eliminates the need for needle packing; and micrometer fluid control.

Bede T-100 Airless Spray Gun

This gun is adaptable to all Bede Airless Spray Coating systems. It is produced by Bede Products Corp., Amherst, Ohio.

For more data circle **28** on Reader Service Card

★ ★ ★

Spray Cleaner

Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Mich., has developed a series of spray cleaners to be called "Jet" cleaners. These cleaners remove soil from zinc, copper, brass and steel.

They are said to produce little foam, even under high pressure and turbulence. Thus a wider range of concentrations can be used, it is stated.

Low foaming characteristics permit the cleaner to carry a heavier dirt-load

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source book for:

EQUIPMENT
MATERIALS
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used in the Finishing Industry—

Electroplating,
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Porcelain Enamel,
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PRODUCTS FINISHING directory—

without redeposition or use of hard to rinse chemicals, it is stated.

For more data circle **29** on Reader Service Card

★ ★ ★

Acid Additive

Akweons No. 674, an acid additive that also acts as an emulsifier and wetting agent in sulfuric, hydrochloric and phosphoric acid baths, has been introduced by Swift & Co., Industrial Oil Dept., 1832 165th St., Hammond, Ind.

While the basic purpose of this material is to retard acid attack on the parent metal without affecting the acid's action on surface impurities, it is also effective as a fume depressant and rust inhibitor. It is soluble in acid, alkaline and neutral solutions.

For more data circle **30** on Reader Service Card

Filter Pump

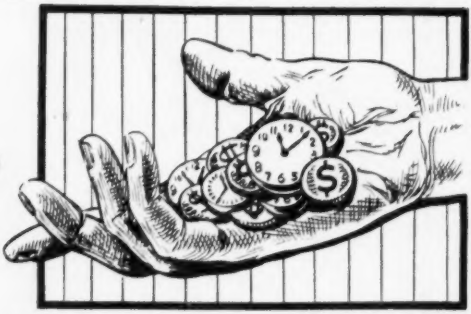
Sethco Manufacturing Co., 70-72 Willoughby St., Brooklyn 1, N. Y., has announced the addition of Model LSIN-30 to its series of self-priming filter pumps. This filter pump is rated at 350 g.p.h. filtering capacity.

Sethco Filter Pump

It can be used for filtering all common acid and alkaline solutions; has 400 g.p.h. open pumping capacity; has a transparent, high-temperature clear plastic filter chamber; incorporates back washing with reversing switch; and is compact and light in weight.

time is money...

ELECTROPOLISH... AND SAVE IT!



Electro-Glo electro-polishing concentrates mean savings to you in Time, Labor and Production Costs. Brightens, smooths and deburrs in one simple operation.

Copper Alloys.....ELECTRO-GLO #200
Austenitic Stainless Steel ELECTRO-GLO #300
Martensitic Stainless Steel ELECTRO-GLO #400
Carbon Steel..... FERRO-GLO #500

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1430 S. TALMAN AVE.
CHICAGO 8, ILLINOIS

For more data circle **234** on Reader Service Card

RED LABEL DARCO®* keeps baths cleaner with LESS labor!

High bulk density of DARCO activated carbon means that your filter holds up to 50% more carbon . . . runs up to half again as long between clean-outs. Time and labor for dumping filters is greatly reduced.

Darco Saves Anode Metal . . . Cuts Rejects

Red Label DARCO S-51 is the one carbon especially developed and made for efficient removal of impurities from plating solutions. It wets quickly, purifies economically. It's the leading choice of platers everywhere, because by keeping solutions pure, they keep down rejects and avoid wasting hard-to-get anodes.

A distributor near you carries DARCO in convenient 10-lb. and 50-lb. cartons. Order today . . . and be sure to ask for DARCO by name!

*Made exclusively for the Plating Industry.

DARCO IS MADE BY

Chemicals Division
ATLAS POWDER COMPANY
Wilmington 99, Delaware
Atlas Powder Co. Canada Ltd. Brantford, Ontario, Canada

For more data circle **235** on Reader Service Card

Filter tubes of cotton or dynel wound around a stainless steel core permit the removal of particles down to 1 micron.

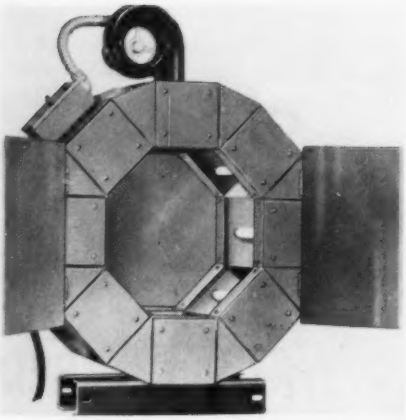
The pump used on the LSIN-30 is 316 stainless steel, self-priming with a neoprene impeller. The pump will develop pressures up to 35 p.s.i. during the filtration cycle. A ¼-h.p. motor is used. A reversing switch (optional equipment) allows the operator to clean the filter chamber quickly, without dismantling.

For more data circle **31** on Reader Service Card

★ ★ ★

Infrared Laboratory Oven

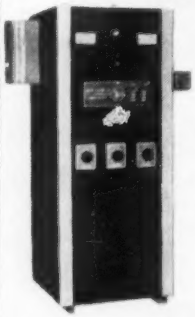
Fostoria Pressed Steel Corporation, Dept. 1022, Fostoria, Ohio, has Introduced small radiant heating units designed for research and testing purposes. By installing laboratory ovens, technicians can determine the answers to heat processing problems as they arise, or develop new finishing techniques through on-the-spot tests in their own plant.



Fostoria Midget Infrared Laboratory Oven

Laboratory ovens incorporating the

GERMANIUM
rectifiers



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- LONG LIVED

Catalog available on request

95% Efficiency at full load is standard with the new RAPID GERMANIUM RECTIFIERS.

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2877 MIDDLETOWN ROAD, N. Y. 61, N. Y.

For more data circle **236** on Reader Service Card

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle **237** on Reader Service Card

A NEW ACHIEVEMENT IN SPRAY-CLEANING EFFICIENCY

JET CLEANERS

JET CLEANERS are economical, efficient, low-foaming spray cleaners for use on zinc, copper, brass or steel.

- They step-up the efficiency of your spray cleaning equipment.
- Reduce overflow loss, permitting wider range of concentration.
- Carry heavier dirt load without redeposition.
- Remove all types of soil.
- Are harmless to rack coatings and equipment.
- Non-toxic, dust-free, non-caking.
- Offer better results at lower cost.

Let the Northwest Cleaning Specialist explain JET CLEANERS' advantages in your production.

Remember — YOUR COST PER FINISHED ARTICLE IS THE TRUE COST OF YOUR CLEANER

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9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control *serving you since '32*

For more data circle 238 on Reader Service Card

quartz lamp are suitable for laboratory use, since they are easily controlled, and are a high-intensity source of infrared energy. Pencil-thin quartz lamps, which are resistant to thermal shock and impact, provide an intensity of 100 watts per inch of lamp length.

A typical design for laboratory use is 16 inches deep with an opening of 13½ inches. It holds eight 1,600-watt quartz lamps.

At maximum operation with full voltage used, the connected load for this economical oven is 12.8 kw. It is a complete unit, including switch, ventilation blower, lamps and two hinged doors at front. The oven is lined with specular gold plating, which provides a reflection factor of 97 per cent in directing radiant energy to the product or material being tested.

Temperatures of approximately 1,000 deg. F. are possible when the oven is operated at full intensity. In addition to laboratory testing of sample panels, paints and other finishes, the oven can be used for dehydrating materials, preheating, curing and similar processing operations.

For more data circle **32** on Reader Service Card

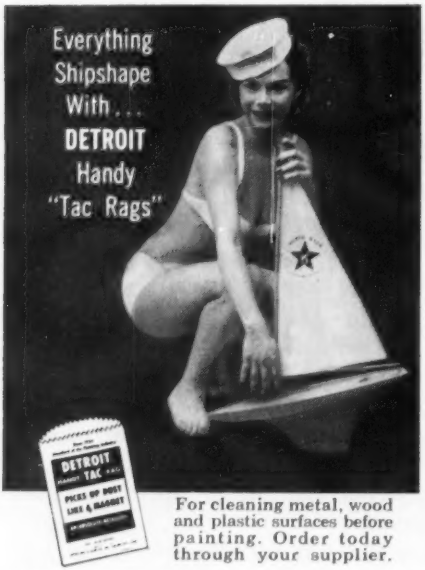
★ ★ ★

Plastic Pipe and Tubing

Haveg Industries, Inc., 914 Greenbank Rd., Wilmington, Del., has announced a line of "Teflon" pipe and tubing and "Teflon" lined steel pipe. Pipe is being made in sizes up to 4-inch diameter; lined pipe in 2-inch sizes.

"Teflon," DuPont trade name for tetrafluoroethylene resin, has desirable

To page 135→



For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

DETRO SALES CO., INC., *Culver City, Calif.*
Standard of the Finishing Industry Since 1934
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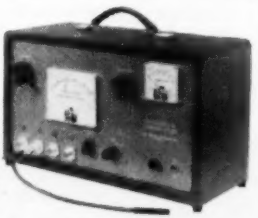
DERMITRON
NON-DESTRUCTIVE
THICKNESS TESTER



FOR METALS ON METALS • NON-CONDUCTORS ON METALS • METALS ON NON-CONDUCTORS
Fast • Accurate • Compact • Portable • Direct Reading
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UNIT PROCESS ASSEMBLIES, INC.
61 EAST FOURTH ST. • NEW YORK 3, N. Y.

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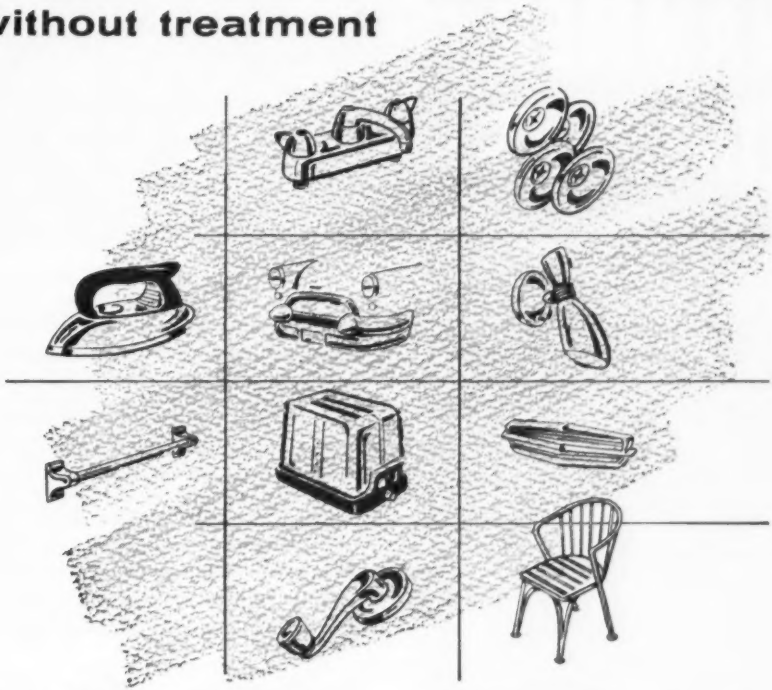
HARSHAW Nubrite

Long, bright nickel plating operation without treatment



Other outstanding advantages are:

BRIGHT OVER WIDE RANGE
from a few amperes/ft.^{2}
to well over 100 amperes/ft.^{2}

HIGH TOLERANCE to common impurities

HIGHLY RECEPTIVE to chrome

EXCELLENT LEVELING

BETTER BRIGHTNESS with thinner deposits.

SIMPLE OPERATION and CONTROL
Plates brightly from 120°F to 155°F.
pH can vary over a wide range.
Liquid addition agents.

REMAINS DUCTILE AFTER LONG OPERATION

For additional information contact the Harshaw office nearest you.

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Detroit 28, Mich. • Philadelphia 48, Penna. • Pittsburgh 22, Penna. • Hastings-On-Hudson 6, N. Y.

For more data circle **241** on Reader Service Card

DAYCO HAMMER FINISHES

For uniformity of pattern, depth of gloss, permanency, toughness, chip resistance; all features that help to make sales and build a quality reputation for your products, specify DAYCO baking or air dry Hammer finish.

Backed by half a century of "know how", Dayco finishes have a quality reputation you can depend upon. We have, or will produce for you, the special finishes your production calls for.

- Clear and colored Lacquers
- Primers
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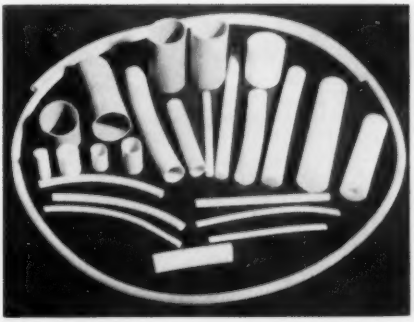


Samples of Haveg Teflon pipe, tubing, rods

electrical, chemical, and thermal properties. It is inert to a wide range of chemicals. It has no known solvent, and is attacked only by molten alkali metals and fluorine at elevated temperatures and pressures. "Teflon" is resistant to nitric, hydrochloric, sulfuric, hydrofluoric, and hydrobromic acids. It is unaffected by highly oxidizing compounds such as aqua regia and sulfur or chlorine dioxides.

Relatively flexible, "Teflon" retains its toughness and flexibility over a wide range of temperatures. It is resistant to abrasion and thermal shock, and will withstand 150 p.s.i. over a wide temperature variation. It is capable of continuous service to 500 deg. F. Reinforced structure of steel pipe lined with "Teflon" makes for even greater resistance to shock and vibration.

Dielectric properties of "Teflon" — high dielectric strength, low power factor and dielectric constant—are excellent, the manufacturer states.

Unique among "Teflon's" properties is its low friction characteristics—few materials tend to stick to its surface. This non-adhesive asset makes it valuable in the handling of sticky materials.

Besides its many obvious electrical applications, this tubing is designed for use with steam or corrosive fluids and chemicals.

For more data circle **33** on Reader Service Card

Solvent Detergent

Oakite Composition No. 117, a solvent detergent that combines thorough cleaning ability with safety, has been introduced by Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

A clear solvent, it removes grease, oil and smut from machinery where water cannot be used. Oakite Composition No. 117 has a flash point of 185 deg. F., Cleveland open cup.

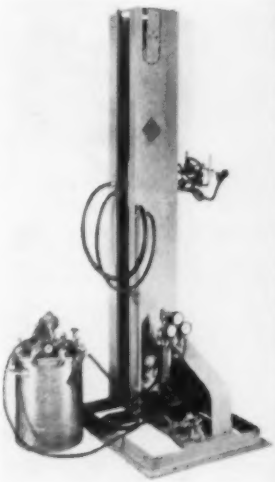
This solvent cleaner is used full strength and is applied by brush, immersion, or a non-atomizing spray. No rinse is necessary—parts may be blown dry with compressed air. For certain uses the material may be diluted with up to equal parts high flash petroleum distillate.

For more data circle **34** on Reader Service Card

★ ★ ★

Vertical Oscillator for Automatic Spraying

A vertical oscillator that carries spray guns through an automatic spray painting cycle has been announced by Paasche Airbrush Co., a Division of Cline Electric Manufacturing Co., 1909 W. Diversey Parkway, Chicago 14, Ill. It permits automatic spraying of panels, boards, strips or other flat pieces carried on overhead conveyors.



Vertical Oscillator

Automatic spray guns are carried up and down on a ball-bearing carriage and are controlled by adjustable, cam-op-

← For more data on advertisement on opposite page circle **242** on Reader Service Card

erated valves that cut off the spray at the end of each stroke. The explosion-proof motor with variable speed drive is adjustable to synchronize with conveyor speeds.

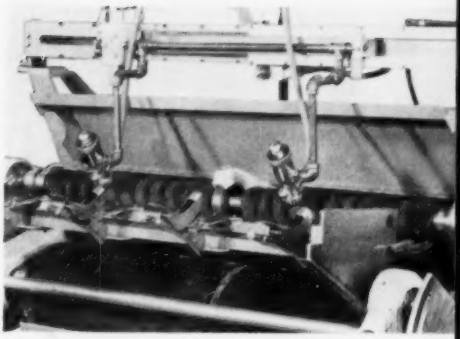
For more data circle **35** on Reader Service Card

★ ★ ★

Spray Gun Mover

A spray gun mover for use in automatic application of liquid polishing and buffing compounds has been developed by Clair Manufacturing Co., 1010 S. Union St., Olean, N. Y. The recently-announced gun mover is designated Series 3020. It is said to be adaptable to a wide range of applications.

The Clair Spray Gun Mover may be equipped with either one or two spray guns. It will accommodate either two or three-port guns. Coverage is adjustable from 2 to 40 inches. Straight-line traverse is adjustable over an unlimited range of uniform speeds, the manufacturer states.



Clair No. 3020 Spray Gun Mover for automatically applying liquid buffing compounds

The device incorporates 110-volt, electrically-controlled air actuation. It is adjustable for spray in either one or both directions of travel.

The standard No. 3020 Gun Mover is also available as a custom-built unit in shorter lengths with shorter maximum coverage, it is stated.

For more data circle **36** on Reader Service Card

★ ★ ★

Rust Preventive Cleaner

A rust-preventing emulsion cleaner has been announced by Haviland Products Company, Grand Rapids, Mich.

It is said to give a light, dry mono-

Engineered for Extra Years of Trouble-Free Operation

WALKER
Selenium Rectifiers

You can't beat Walker Selenium Rectifiers for dependable D.C. regardless of the size of your plating installation.

These outstanding rectifiers are especially designed to give year in, year out service . . . minimum maintenance . . . no moving parts . . . nothing to wear out . . . nothing to get out of adjustment.

You get more for your money when you use Walker Selenium Rectifiers. Get the complete story, today. Write

Walker
THE WALKER DIVISION
NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONNECTICUT

For more data circle **243** on Reader Service Card

"WONDERFUL OPPORTUNITY"

"Thank you very much for the wonderful opportunity you have made possible for me and many others through your electroplating course," writes plating foreman Frank Fullerton of Erie, Pa. You too, will thank me when you complete ELECTROPLATING KNOW HOW, the home study course that teaches you how to THINK plating.

Why not enroll? Write Joseph B. Kushner, Electroplating School, 115 Broad St., Stroudsburg 5F, Pa., TODAY!

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POLISHING and BUFFING • DE-BURRING
WIRE BRUSHING and MICRO-FINISHING

• **Proved performance and dependability in industry for half a century**

RECOMMENDATIONS and QUOTATIONS

• *We will be pleased to receive blue prints or preferably finished and unfinished samples of the part you contemplate finishing together with detailed information on present finishing operation and production requirements. On receipt of samples and data we will offer recommendations and quotations.*

CATALOGS ON REQUEST

ROTARY STRAIGHT LINE SEMI-AUTOMATIC AND SPECIAL *Polishing and Buffing Machinery*

SPECIAL MACHINERY — AUTOMATIC BUFFING MACHINES

ACME *Manufacturing Co.*

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Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

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molecular corrosion-resistant film to ferrous metals, including cast iron. According to the manufacturer, the film imparted has shown exceptional strength in withstanding salt spray. Laboratory prepared steel test panels, treated in a 3 per cent aqueous solution of Havasol CP, have remained in a humidity cabinet (A.S.T.M. method) for over 3,000 hours before showing initial rust, it is stated.

Havasol CP may be used in spray washers, operating either cold or hot. It will not react with soils or hard water to form "gummy" deposits or scale. It contains no chromates and is safe for personnel to handle. The cleaner may be used also as an anti-rust oil, diluted with either solvents or water.

Haviland Products Co., 421 Ann St., N.W., Grand Rapids, Michigan, has available a technical bulletin describing Havasol CP.

For more data circle **37** on Reader Service Card

★ ★ ★

Paint Removers

Creative Chemical Co., Inc., 2727 E. Nine Mile Rd., Hazel Park, Mich., has announced two products for removing paint. The first, called RPO (Rinses Paint Off) Paint Dissolver is said to have improved penetrating power and accelerated action in removing paint. It will cling to and remove paint from any surface, the manufacturer states. The flash point is 75 deg. F.

The second product, named X-1000, is a non-flammable paint remover that is said to dissolve paint completely and make it water soluble. It is somewhat slower in removal action than RPO and etches aluminum more than RPO, but is non-flammable.

For more data circle **38** on Reader Service Card

TUMBLING CHIPS

PROCESSED LIMESTONE HONING CHIPS
are excellent for producing a super fine finish on non-ferrous metals.

PROCESSED RED GRANITE ABRASIVE CHIPS
are exceptionally well suited for developing a fast cut on ferrous metals.

CHIPS IN 16 SIZES

FREE CATALOG AND CHIP SAMPLES FOR COMPARISON.

SAMPLE PARTS PROCESSED
Write or Call
VE 8-2071

UNIVERSAL TUMBLING SUPPLY CO.
14337 Mansfield Detroit 27, Mich.

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MEET AND BEAT EVERY FINISHING PROBLEM WITH

INDUSTRIAL

INDUSTRIAL manufactures all components of complete finishing systems... and makes small batch or conveyor type cleaning and drying machines. INDUSTRIAL equipment in service 20 years is still performing with top efficiency and economy. Tell us your needs; it may pay off big.

ISC INDUSTRIAL Systems COMPANY
Exclusive Sales Agents For: Industrial Washing Machine Corp.
Matawan, New Jersey

For more data circle **247** on Reader Service Card

No SPECIAL HANDLING REQUESTED

This means new business for somebody. It could be you.

Because vacuum-metallized pieces now can "take it," thousands of products will, for the first time, be finished this new way.

More durable lacquers now protect the superb finishes only vacuum metallizing can produce at low cost. New lacquers and resins now stand up to rigorous abrasion tests and exposure to salt spray and high humidity.

Vacuum metallizing is sure to grow rapidly. New business is waiting for you.

At CEC, we are ready to help you with a full range of vacuum coaters, headed by a large 48″ model for metallizing large pieces fast and at low cost.

We'll be glad to send you bulletins on our line of coaters, and share our experience in helping you set up operations.

Consolidated Electrodynamics

Rochester Division, Rochester 3, N. Y.

formerly Consolidated Vacuum

NATIONWIDE COMPANY-OWNED SALES AND SERVICE OFFICES

For more data circle **248** on Reader Service Card

Spray Booth Compound

Klem Chemicals, Inc., Dearborn, Mich., has introduced a non-caustic, non-oily, non-foaming compound for conditioning the water, protecting equipment and reclaiming paint in all types of water-wash spray booths. It is formulated for use with lacquers.

"Number 1160" as it is designated, does not digest the paint or break it up into small particles. It forms a protective film around paint molecules and causes them to float rather than sink. The "captured" paint can be skimmed off and is in excellent condition for reclaiming, the manufacturer states.

Write for Technical Bulletin 1160. Klem Chemicals, Inc., 14401 Lanson Ave., Dearborn, Michigan.

For more data circle **39** on Reader Service Card

★ ★ ★

Improved Platinum Crucible

An improved platinum crucible has been developed by Baker & Company, Inc., 113 Astor St., Newark 5, N. J.

Polygon - shaped, it incorporates a number of useful features.

The flat sides of the polygon extend only three-quarters of the way down, and the lower part of the crucible is tapered and circular in shape, with a flat bottom.

Among the advantages of the polygon - shaped crucible are:

1. The crucible can be picked up with tongs easily without danger of crimping.

2. When picked up for pouring, the polygon shape always provides a corner spout.

3. Two hot crucibles, flat side to flat side, can be picked up at one time with greater ease and safety.

4. The flat bottom makes the

TITAN CHAIN IMPROVES FINISH 100% WITH HOT SPRAY

With hot spray, Titan Chain Saw, Inc., Seattle, Washington, reports a far better finish on their popular gasoline-powered chain saw. The finish is smoother, cleaner, glossier, and denser. In hot spraying magnesium castings with red and yellow lacquer, Titan found these improvements: better build and hold-out, improved coverage, less porous film, less orange peel, less rejects. They found that one coat of hot spray replaces two coats of conventional spray.

Titan is one of the many progressive manufacturers who are discovering that hot spray's high solids content film produces higher quality finish at lower cost.

Find out what hot spray's lower atomizing pressure and uniform viscosity can do for YOU!

Write for the free booklet entitled "Why Hot Spray?", published by the Spee-Flo Company, Dept. PF-22, 720 Polk, Houston, Texas.

For more data circle **196** on Reader Service Card

You Protect Your Reputation When You Protect and Beautify Your Product With

NIKOLAS

Fixture Illustration Courtesy H. A. Framburg & Co.

QUALITY FINISHES

The Choice of Leading Finishers and Manufacturers

SINCE 1890

With Nikolas Industrial Finishes, you can be assured of Quality Products with Guaranteed Uniformity. High solids, Low viscosity produce additional coverage that can actually show savings compared to finishes selling for 50% less. Why jeopardize your reputation with inferior finishes when the finest cost no more?

CLEAR METAL & WOOD LACQUERS • LACQUER ENAMELS
SYNTHETIC COATINGS (Baked or Air Dry—Clear Transparent Colors or Enamels)
NOVELTY FINISHES

For Information, Samples and Recommendations, Write, Wire or Call!

NIKOLAS
SINCE 1890

G. J. NIKOLAS & CO., Inc.

2880 WASHINGTON BLVD., BELLWOOD, ILL.
33 GRAND ST., BROOKLYN, N. Y.

For more data circle **249** on Reader Service Card

crucible less susceptible to tipping. Added stability results when a number of crucibles stand together, side to side.
For more data circle **40** on Reader Service Card

★ ★ ★

Spray Gun

The recently-announced Paasche Model 21 Spray Gun incorporates a dual-purpose air valve, which allows the operator to control the compressed air supply so as to produce an infinite pattern adjustment with a minimum number of air caps. This is accomplished by using air from the horn holes only, the center air cap holes only, or a mixture of any proportion of air from these two sources.

Model 21 Spray Gun

The well-balanced gun has a short, compact head and two-finger trigger. All internal metal parts are stainless steel. The Teflon packing materials used are self-lubricating and will not wear out, harden or absorb moisture.

Large, unrestricted air passages of short travel through the gun assure ample volume to atomize the heaviest materials and aid in high speed atomization at lower pressures, it is stated.

The short, large-diameter fluid passage is easily cleaned by flushing with solvent. The cartridge-type air valve assembly can be removed for repair or replacement without difficulty, if required. A bulletin available from Paasche Airbrush Co., 1909 W. Diversey Parkway, Chicago 14, Ill., gives complete details.
For more data circle **41** on Reader Service Card

★ ★ ★

Photomicrographs Show Bright Nickel's Action

Leveling characteristics of the bright nickel plating process called Levelume are revealed in the accompanying photomicrographs taken at Hanson-Van Winkle-Munning Co., where the process was developed.

Levelume reportedly combines qualities of "full" brightness, high leveling and exceptional speed. Field tested in several high-production installations, it has indicated high deposition rates and economies of installation and operation, the manufacturer states.

Practically any existing nickel plating installation can be converted to Levelume, H-VW-M reports. No special auxiliary equipment is required. Tanks must be cleaned and leached. Almost any rubber-lined tank previously used with bright nickel solution

METABOND
MEANS *PROGRESS* IN RUSTPROOFING
METABOND is the only effective immersion or spray amorphous type zinc coating in the industry today.
METABOND withstands severe and consistent flexing and bending without chipping or breaking bond.
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1575 MERWIN AVENUE • • • • CLEVELAND 13, OHIO
MANUFACTURERS OF RUST PREVENTATIVES & CORROSION SOLVENTS
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Production and Quality Up!

WITH **SLY** CONVECTIONEERED OVEN

With an increase in business, the Interior Steel Equipment Co. has augmented their paint baking facilities. In doing this they have achieved economies in handling of work while maintaining and even enhancing the quality of their products.

They installed a Sly Convectioneered Oven, 45′ long, 9′ 6″ wide, 6′ 9″ high with semi "A" type sheet metal hoods at the exit and entrance ends to form an efficient heat seal. Beneath the oven is a self-contained 2,500,000 BTU per hour direct gas-fired heating unit.

As aids in achieving excellent finishes on the products are: (1) efficient air distribution over the work (2) temperature uniformity in the baking zone (3) correct exhaust conditions to maintain proper oven atmosphere, and (4) a low overall temperature gradient between supply and recirculation temperatures.

This installation is typical of the careful engineering that goes with all Sly Industrial Ovens. *May we discuss your requirements with you?*

Designers and Manufacturers of: Dust Control Systems, Blast Cleaning Equipment, Tumbling Mills, Industrial Ovens.

THE W. W. SLY MANUFACTURING CO.

SINCE 1874

4784 **TRAIN AVENUE** • **CLEVELAND 1, OHIO**

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can be employed with Levelume.

Addition agents are the key to the process' success. These make it possible to use an activated carbon pack in the filter for the plating solution. This continuously removes harmful organic contaminants, eliminating the need for time-consuming batch purification.

H-VW-M also reports these advantages for the process:

Fig. 1—Two coatings of Levelume have been applied to a grooved rough surface (center of photo). The first leveled the metal, the second (thin coating at top of photo) was applied for brightness. Total thickness of combined Levelume coats is 0.0015 inch. 1000X.

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McKeon's "Liquid Sulphur"

Economical, fast, non-electrolytic.

Sulphur Products Co., Inc.

McKeon Bldg., 621 W. Pittsburgh St., Greensburg 6, Pa.

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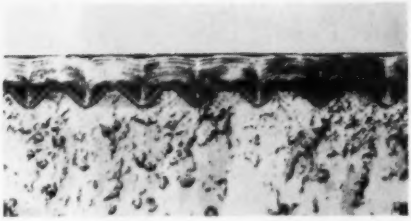

Fig. 2—A surface with a series of grooves, 0.0015 inch deep. The area above the grooves is a bright Levelume finish, 0.002 inch thick. High leveling characteristics of Levelume are indicated by evenness of deposition. 120X.

1. Good ductility and controlled stress in either the compressive or tensile side, eliminating cracking, crazing and brittle deposits.
2. Effective plating within a wide current density range—from 20 to 150 a.s.f.
3. High leveling characteristics, eliminating in some cases subsequent polishing and buffing, as well as reducing post-treatment.
4. High surface activity of deposits.
5. Uniform brightness of recessed surface area.

Other advantages include: bath stable in operation, pleasing white color deposits, simplified control and high tolerance to impurities. With the bath agitated and continuously filtered, deposits are not rough.

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★ ★ ★

Multi-Colored Finish

A multi-colored finish produced by spraying two or more colors at one

MORSE DRUM DOLLY No. 13

Perfect for vertical handling of open end drums. Easily handles loads up to 700 lbs. Built of 2½" steel for long life. 24" diameter; overall height 6½". Has four 3" dia. steel swivel casters for easy rolling into small areas. Rubber wheels available.

MORSE MFG. CO., INC. **$9.90** FOB

762 W. Manlius St., E. Syracuse, New York

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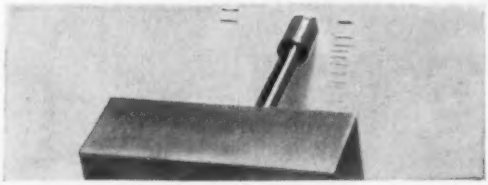
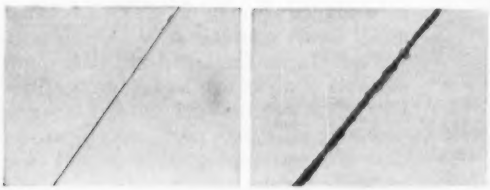
NEW HIGH IN IMPACT-RESISTANCE

under organic finishes:

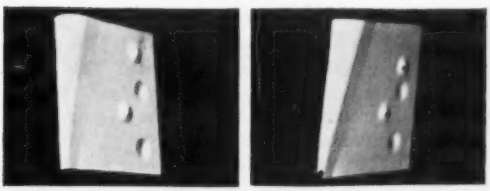
Pennsalt FOSBOND zinc phosphate coatings



CHIP-RESISTANCE. Finishes on Fosbonded panels resist twice the weight of impact as do finishes applied over conventional zinc-phosphate coatings.



SALT-SPRAY TEST. No creep of corrosion on Fosbonded panel after 300-hour exposure, while conventional zinc phosphate allows 1/16" undermining of paint film.



IMPACT TEST. No paint fractures on impact and bending of Fosbonded panel (left), while paint on panel with conventional coating fractures from same treatment.

Rough treatment, chipping impacts, severe weathering and corrosion—those old paint-damaging standbys—are no longer bogeys to the organic finishing operation. Pennsalt's know-how in metal surface preparation has produced a series of FOSBOND® zinc phosphate coatings that protect steel surfaces against these abuses better than other methods thus far developed.

If your problem is impact . . . corrosion . . . other chemical and physical conditions that wreak havoc on paint adhesion—there's a Fosbond cycle to meet it, at low cost and without any change in your present equipment.

Let the man who knows look at your phosphating problem! He's from Pennsalt, where the greatest store of metalworking chemical knowledge is ready to help you. Call him or write Metal Processing Dept. 368, Pennsylvania Salt Manufacturing Company. East: Three Penn Center Plaza, Philadelphia 2, Pa.; West: 2020 Milvia Street, Berkeley 4, Calif. In Canada: Pennsalt Chemicals of Canada, Hamilton, Ontario.

Pennsalt Chemicals

METAL CLEANERS • PHOSPHATE COATINGS
COLD-WORKING LUBRICANTS

A BETTER START FOR YOUR FINISH

For more data circle **254** on Reader Service Card

time from a single container has been developed by Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.

Registered under the name Poly-Nam, it is being used to achieve varied tone-on-tone effects with textured dimension, the manufacturer states.

Poly-Nam air dries to touch in an hour and dries to a hard, semi-gloss finish in four hours.

Poly-Nam can be retouched easily, it is stated, since there is no problem of matching colors precisely, no difficulty in overlapping one shade with another.

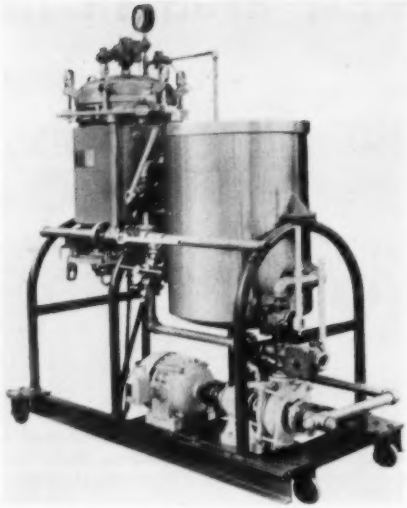
This coating is resistant to wear and abrasion and retains its appearance even after repeated scrubbings, the manufacturer states.

For more data circle **43** on Reader Service Card

★ ★ ★

Portable Filter Unit

The Duriron Company, Inc., Dayton 1, Ohio, has introduced a portable stainless steel filtration unit. The unit is designed for pilot plant or other small batch operations.



Durco-Enzinger Portable Filtration Station

The Durco-Enzinger filtration unit consists of a vertical leaf pressure filter with 21.2 square feet of leaf area, a precoat and slurry tank, pump, valves, and complete piping, all mounted on a portable frame.

The filter is an Enzinger Model DS 18/21.2 with either wet or dry cake discharge of filter cake. It incorporates a tailings leaf to completely filter the liquid heel. The filter shell is steam jacketed to increase the versatility of this packaged unit. Valves are Durco Type F with Teflon sleeves. The pump is a Series R Durcopump. The complete unit including filter, tank, pump, valves, and piping is Type 316 or Durimet 20 stainless steel.

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SOLVENTS and THINNERS RECOVERED

from wash thinners, spoiled lacquers, degreasing machine sludge, etc.

Solvents recovered by the Lofgren Process. Each customer's shipment, whether one drum or a carload, receives proper and separate treatment. *Write to:*

Solvents Recovery Service, Inc.
1025 Broad St. **Newark 2, New Jersey**
Hammond Solvents Recovery Service
241 Brunswick Rd. **Hammond, Ind.**

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Quality surface treatments for metals

PARKER RUST PROOF COMPANY
DETROIT, MICHIGAN

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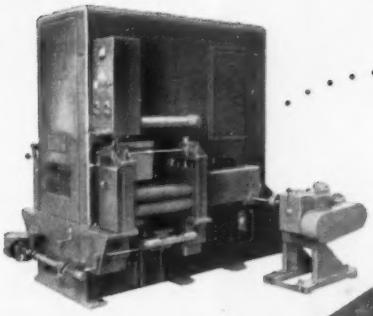
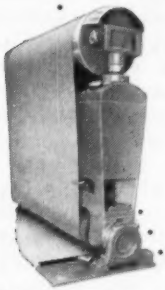


ABRASIVE BELT GRINDING & POLISHING MACHINE
(Pinch Roll Type)

For pre-finishing, conditioning and polishing sheets, plates, strips or blanked-out shapes in flat form. Used as single units or in multiple units for progressive line polishing.

for FINISHES that pass inspection the FIRST TIME get a HILL Grinding & Polishing Machine



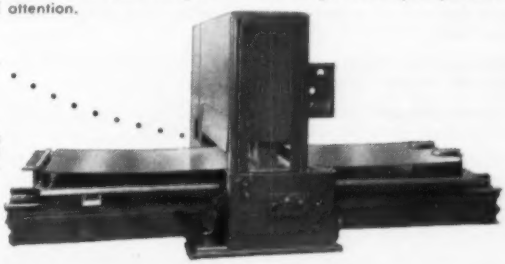
The basic HILL two-roll vertical head with endless abrasive belt. Used in both the Pinch-Roll and the Hydraulic Table types.

● HILL 2-ROLL Vertical Abrasive Belt Grinding and Polishing Machines are made in two general types for producing superior finishes on flat surfaces as required by manufacturers of a wide variety of products such as decorative plastics, auto bumpers, engravers plates, home appliances, etc.

Both types are built in polishing widths up to 60" and larger sizes can be furnished if desired. Your problem will be given our prompt and careful attention.

ABRASIVE BELT POLISHING MACHINE
(Hydraulic Table Type)

For flat polishing of sheets and plates of ferrous and non-ferrous metals. Made in a variety of table widths and lengths with full hydraulic reciprocating table.



THE HILL ACME COMPANY

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"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

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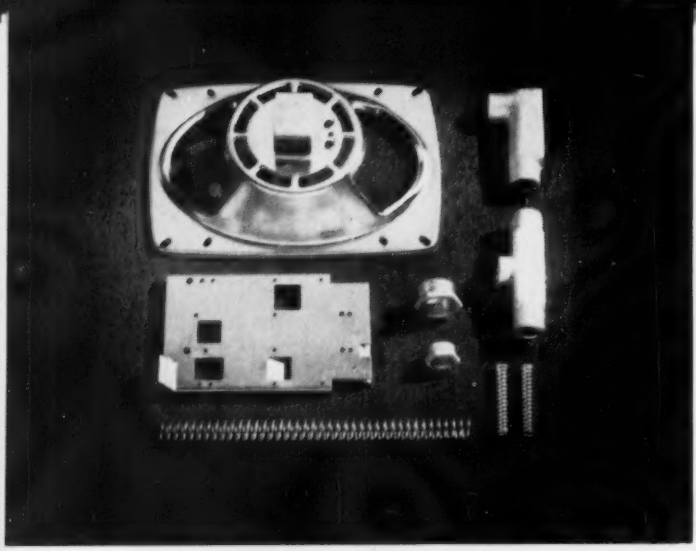


A FINER CADMIUM PLATING PROCESS by UDYLITE

Bry-Cad Process Gives a Faster and Brighter Cadmium Finish

Newly developed by Udylite research, Bry-Cad offers many interesting applications for cadmium plating.

Springs—Bry-Cad provides excellent protection with a minimum of hydrogen embrittlement.

Electronic Assemblies—Bry-Cad's low electrical contact resistance is highly desirable on assemblies put together with fasteners. An excellent surface for rapid soldering.

Malleable Iron Castings—Bry-Cad gives unusual coverage not obtainable with similar rustproofing finishes.

Stainless Steel Aircraft Parts—Bry-Cad does not cause embrittlement of stainless steel parts subjected to high temperature.

Udylite Bry-Cad has other advantages such as: High cathode efficiency, simplicity of operation and control, attractive finish with less tendency to finger mark, a self-lubricating metal and good resistance to mild alkalies. Bry-Cad is easily adapted to plating in barrels, hand operated tanks, semi-automatics or full automatic machines.

The Udylite Bry-Cad process is just one of the many electroplating processes pioneered by Udylite. Whether your need is for a process, equipment or supplies—be sure to consult your Udylite representative or fill out coupon and mail to us direct.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

Metex Filter Aid

Rate of flow and clarity of solutions being filtered are greatly dependent upon the type of filter aid used. After hours of testing, Udylite laboratories recommend Metex Filter Powder to users of filter aids.

Metex Filter Powder contains no soluble matter to dissolve in the plating solution and cause roughness in the plated deposit. The uniform interlocking fibers of the filter cake hold tightly to the filter cloths, plates, stones or screens, regardless of the pressure applied, yet are readily removed when required.

Metex Filter Powder is very economical to use. For example, when used with the Udylite-Detroit 3-1000 Filter, which has a rated flow capacity of 1,000 g.p.h., only 1½ pounds are needed.

Round Lead Anodes

Round Lead Anodes by Udylite show increasing popularity month after month as compared to flat anodes. Sales increases are nation-wide. The simple shape of the economical Round Lead Anodes provides the greatest active plating surface area. The heavy cross-section withstands high current density without overheating. Less current is needed. Corrosive chromate buildup usually found

For more data circle **258** on Reader Service Card

(Adv.)

on the side of the anode facing the tank lining is greatly reduced, assuring even anode wear. Warping is eliminated by the use of Round Lead Anodes with their heavy cross-section. Round Lead Anodes offer economy to the user.

Forged-Copper Ball Anodes

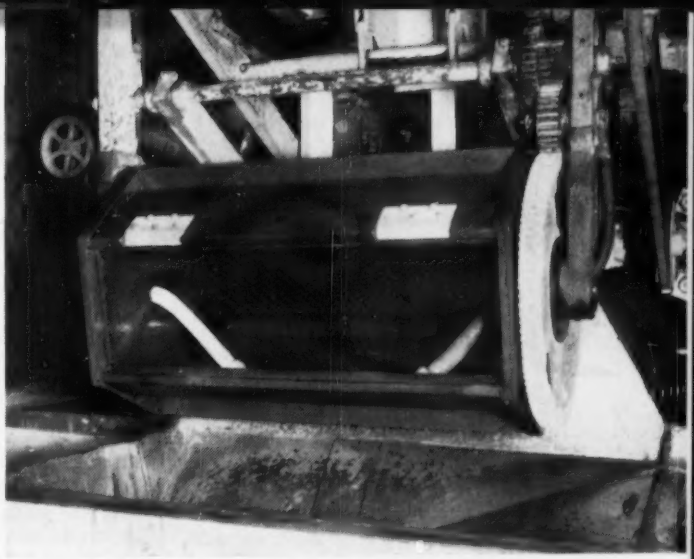
To Electroplaters who have not used Forged-Copper Ball Anodes in their copper plating processes, we urgently suggest a trial of these anodes for comparison purposes.

Udylite Forged-Ball Anodes eliminate oxide inclusions and anode sludging, which give a rough plated finish. Copper deposits are smoother because forged anodes corrode more smoothly and uniformly. There are fewer rejects, and therefore operating economy is greater. The extra-smooth deposit means easier buffing.

Forged-Copper Ball Anodes make an ideal fine-grained undercoat for nickel and chrome. They produce consistently excellent results with Bright Cyanide Copper, where smoothness of deposit is of utmost importance.

Forged-Copper Ball Anodes by Udylite combine the well-known advantages of the ball shape, *plus* fine, uniform grain structure.

For more data circle **259** on Reader Service Card
(Adv.)



THE BEST BARREL CYLINDER EVER MADE

After 13 Months Of Three-Shift Usage This Udylite Tempron Cylinder Shows Little Wear

This unretouched photograph shows a Udylite Tempron Barrel Cylinder which has been in use for thirteen months, most of the time in a "round the clock" operation. This cylinder looks like new.

Seams are tight and there is no warping although it has processed thousands of heavy loads of work through a complete cycle of *electro-clean, acid pickle, zinc plate, bright dip* or *dichromate* and *hot* and *cold rinses*. Most of these loads have been beyond our guarantee of 200 pounds per 14" x 30" cylinder.

In January, 1955 and after two years of exhaustive tests, Udylite formally introduced the Tempron Barrel Cylinder as the most efficient and long lived plating barrel ever offered. The vitality of Tempron and the durability of Udylite construction has now been convincingly proven in hundreds of operations.

During a recent twelve month period, a set of Udylite Tempron Barrel Cylinders has processed millions of pounds of work, mostly through the complete zinc cycle. Any measurement of wear is almost impossible.

Udylite Tempron Cylinders withstand, even under load, the highest temperatures used in plating. Withstand stronger acids. Have greater resistance to abrasion and can be used through the entire plating cycle.

Let us tell you more of the advantages of Udylite Tempron Cylinders or show you "on the job" examples. Write us today.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Spotting Under Clear Lacquer

Question: *We have a problem with which we have been troubled for years. During the summer months in this part of the country, the farmers spray their vineyards with sulfur dust to prevent mildew, and as a consequence, there are days when it is impossible for us to lacquer any brass or copper work because the clear lacquer reacts with the slightest sulfur particle and spreads to form a small brown spot. Sometimes these spots are so numerous that it is necessary to remove the lacquer and refinish at some later date. The spot is on the brass itself which shows after the lacquer is removed. We have tried an air filter in the air line, cleaning the work as for plating, spraying at different times of the day—early in the morning, and late at night—also sulfur resistant lacquers. Just lately, we installed a refrigerator-type air conditioner in the room but with no success. As a matter of fact, it increased our spotting trouble. After harvest time in the fall, this trouble will disappear. Is a solution to our problem hopeless?*

M. A. R.

Answer: Your problem does not appear to be hopeless, but it is not one which can be solved without further study and perhaps more equipment.

The solution to the problem is, of course, to treat the air in your shop so that the sulfur dust is removed. One way to do this would be to make a completely enclosed spray area which is maintained under positive pressure at all times. The air to be introduced into this spray booth would have to be thoroughly washed and filtered to remove all dust and contamination. This would require air washers, filters, and fans, in addition to a completely enclosed work area. The work to be lacquered or painted would have to be kept covered prior to painting.

Another solution to the problem might be the substitution of a lacquer dipping process for spraying. This may not be feasible by reason of the shapes of parts which you must lacquer. However, if lacquer dipping is feasible, you could use a chemical cleaning cycle (mild alkali cleaning solution, water rinse, etc.) followed by a dip in a water dip lacquer (while the parts are still wet from the final rinse). This might produce a good enough finish for your purpose. If a satisfactory final finish was not produced, it is possible that you could spray or dip the parts following the preliminary water dip lacquer.

Since lacquer manufacturers have certainly experienced problems similar to this one, I am sending copies of your letter and my suggestions to a number of them so that they may advise you

regarding any special lacquers or special processing techniques which will assist you.

Answer No. 2: We would make the following suggestion to eliminate your problem with sulfur dust. We would recommend an enclosed room with sufficient amount of filter panels to compensate for the withdrawal of air by the exhaust of the spray booth, then we would clean the articles in an alkali cleaner, rinse in cold water, rinse in 3 per cent sodium cyanide solution, rinse in cold water, rinse in hot water (about 175 deg. F.) then rinse in a precipitating thinner to absorb the water. This thinner will evaporate and will leave the articles clean and free from water stains. They should then be lacquered immediately by spraying or dipping.

We feel that using the precipitating thinner and lacquering immediately will minimize your problem considerably, and if you are sure that no particles of sulfur come through your spray line, then you should have no trouble. Otherwise, you may have to resort to dip lacquering, which would, of course, mean dipping equipment.

R. J. H.

★ ★ ★

Cleaners for Type Forms

Question: *We are plate makers in the electrotyping industry. We mold from typeforms from which proofs have been pulled. This type usually stands for a day or less with a certain amount of printer's ink on the type.*

Before we make a plastic mold off this type, it must be completely clean. Due to the fact that some of the forms have cuts in them which are mounted on wood, we cannot immerse these forms into a tank of solution. All of our cleaning is done by a hand brushing operation with a benzol solution. This seems to be an antiquated method of cleaning and is not wholly efficient. Would you be able to suggest a more efficient method of removing ink from the forms before molding?

After cleaning and molding the form, we must scrub our plastic mold to remove dirt or ink that invariably comes off the form. We do this in order to cover the plastic with a film of silver prior to plating. Do you have any suggestions as to a solvent or detergent that would clean the plastic efficiently?

W. K.

Answer: We are referring you to several manufacturers of cleaning solvents who may have especially designed solvents which will make your operation faster and better. They may also be able to suggest methods of using certain solvents which you will find to be advantageous.

★ ★ ★

Stop-off for Copper Plating

Question: *Please advise if you can recommend the name of a manufacturer who can furnish us with a stop-off lacquer to be used to stop-off areas on steel parts against copper deposition. The stop-off lacquer must not lift at the edges or be underplated with copper since the stopped-off areas are to be carburized or nitrided. We are using a Rocheltex-type copper cyanide plating solution maintained at a temperature of 140 deg. F. We have tried several lacquers but found they would lift within five minutes while the part was plating. Rubber masks have not worked out satisfactorily, especially on gear teeth.*

E. J.

Answer: It is our suggestion that you use a plastisol coating rather than a lacquer for this purpose. We are forwarding the names and addresses of manufacturers of plastisol coatings.

News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . training courses . . . societies

NEW PLANTS

Schaffner Manufacturing Company has broken ground for a new building to provide additional space for manufacture of Schaffner Metal Center Air-cooled Bias (type) Buffs. Announcement of this addition to the company's facilities was made by Gus J. Schaffner, Jr., chairman of the board of directors.

★ ★ ★

The **International Rustproof Corporation,** manufacturer of rustproofing chemicals, has moved to 1575 Merwin Ave., Cleveland 13, Ohio. The new and larger location comprises a four-story building which will house all general and executive offices, and the research and development laboratories. A new pilot plant laboratory has also been installed. It will be under the direction of L. D. Barrett.

New home of International Rustproof Corp.

Newly-expanded plant of Circo Equipment Co.

Doubling of production and engineering facilities at the Rahway, N. J., plant of **Circo Equipment Company** has been completed, Melville Morris, president, has announced. An increase in the sale of degreasers, metal parts washers and ultrasonic equipment has made this expansion necessary.

★ ★ ★

An expansion of **The DeVilbiss Company** direct factory branch in Dallas, Texas, and relocation in the Trinity Industrial District on Irving Blvd., a main artery between Dallas and Fort Worth, have been announced by Henry M. Kidd, vice president in charge of spray equipment sales.

DeVilbiss manufactures spray guns, booths, air compressors, rubber hose and other components for complete finishing systems.

Marking the third expansion by DeVilbiss in the Dallas area, the new facility will be ready for occupancy about November 1, and it will have double the area of the old location.

The new structure will contain offices for sales representatives and will

"Departmentalized" Cleaning Simplifies Production of Thousands of Small Parts

A major midwest business machine manufacturer has, during the past two years, installed 13 Magnus Aja-Lif Cleaning Machines in its production lines. Production bottlenecks and wasted time have been eliminated as the thousands of parts are cleaned in the same areas where they are stamped, machined, forged or otherwise processed.

This is another example of how the increasing use of Magnus Methods, Machines and Materials is resulting in more efficient metal cleaning wherever used.

For additional information write Magnus, 208 South Avenue, Garwood, N. J. for your copy of 36-page Manual 10,000G.

magnus

INDUSTRIAL DIVISION

MAGNUS CHEMICAL CO., INC.

—a world wide organization specializing in the cleaning and protection of all surfaces

For more data circle 260 on Reader Service Card

house service and engineering departments, a rebuilt exchange center and warehousing space.

National Metal Exposition Exhibitors

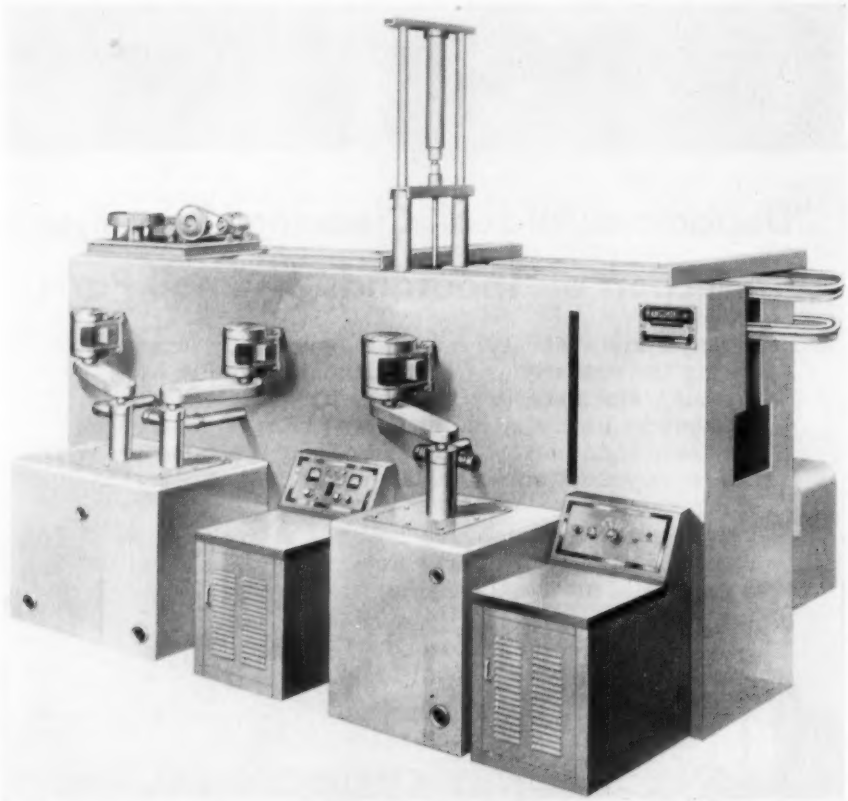
Visitors to the 1956 National Metal Exposition in Cleveland will see a unique cleaning system in operation. **Ransohoff, Inc.,** Hamilton, Ohio, will display a completely automatic, 5-stage, Monorail Ultrasonic Cleaning System.

Demonstrated with actual production line parts, the machine will show how blind holes and difficult recesses of castings, engine parts, stampings, valve bodies and other parts can be cleaned efficiently.

The machine combines a single ultrasonic cleaning stage with conventional wash, rinse and dry sections. Parts are carried through the machine on an automatic indexing double monorail conveyor.

The Bendix-manufactured ultrasonic unit has proved to be effective in removing grease, lapping compounds, cutting oils, abrasives and other contaminants.

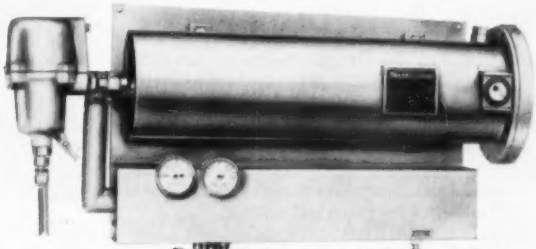
In operation, the parts are loaded on fixtures traveling on the automatical-



The Ransohoff Multiple-Stage Ultrasonic Cleaning System: automatic and conveyorized.

THERM-O-SPRAY HOT SPRAY UNITS

Trade Mark Reg. U.S. Pat. Off.



Fully approved by Underwriters Laboratory and N. Y. Board of Standards & Appeals

Type SPC-4N

—the leading Hot Spray Unit used all over the world

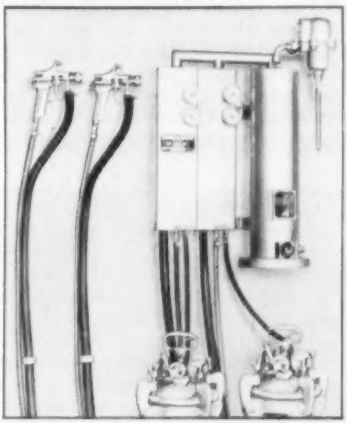
No pumps. No gaskets to leak. No overheating of paint. No moving parts. Use with any standard spray painting equipment--manual or automatic. Simple. Efficient, Troublefree.

The air used by the spray gun is electrically heated and in turn heats the paint. This process is fully covered by basic patents in U. S. and other countries. During spray interruptions the liquid hose is kept hot by circulation of hot air without use of pumps, which may wear out and leak.

For quick color changing, use Multi-Color Therm-O-Spray with 2 to 4 paint heaters. Special models available with 5 to 25 paint heaters.

For Cup Spraying, use the Thermo-O-Spray Cup Heater LFK.

Write for further information



THERM-O-SPRAY MULTI-COLOUR TYPE SPC-42/2

Type LFK Cup Heater

Reduce production costs—obtain better finishes!

THERMOSPRAY COMPANY, INC.

103 Park Avenue, New York 17, N. Y.

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For more data circle **261** on Reader Service Card

ly indexing monorail conveyor. They move through the following stages: 1) wash, 2) rinse, 3) ultrasonic cleaning, 4) rinse, and 5) hot air drying.

In the washing, rinsing and drying sections, the parts are subjected to sprayed wash or rinse solutions or to drying air. In the ultrasonic cleaning section, the parts are automatically lowered into the ultrasonic tank where high-frequency sound waves break contamination loose from the metal parts. "Scrubbing fingers" of sound reach into tiny crevices, blind holes and other complicated areas.

Aside from the ultrasonic and automatically indexing conveyor features, the Ransohoff-designed and built machine offers other interesting details: solution tanks and drying air are heated with electricity and are temperature-controlled; the machine is placed in operation by pressing a single button; parts then proceed through the machine automatically, emerging thoroughly cleaned and dried.

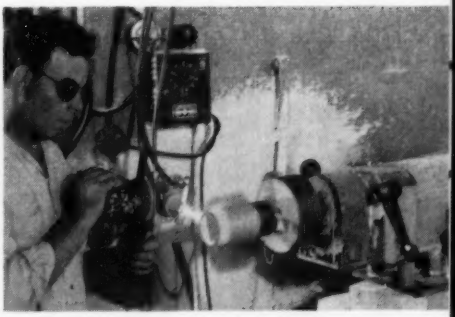
★ ★ ★

An actual demonstration of the application of Rokide Spray Coatings will be the highlight of the **Norton Company** exhibit in booth 2414 at the National Metal Exposition, October 8-12, in Cleveland, Ohio.

Norton operators will show the ease with which these oxide coatings can be applied to a variety of base materials to protect against the effects of high temperature, abrasion, erosion and corrosion, and to provide electrical insulation. Rokide Coatings have already found an important place in the field of rockets and jet propulsion.

Other products to be shown include Norbide Boron Carbide products, including sandblast nozzle liners, grinding wheel dressing sticks, loose grain for lapping and polishing, and wear resistant parts; and several silicon carbide products for non-abrasive uses.

Norton representatives who will be in attendance at the booth are: sales engineers: George W. Barnes, Sheldon V. Coleman, Charles C. Esty, W. Kenneth Sears, and Roland J. Westerholm; research engineers: Elmer G. Hurd and W. Maxwell Wheildon; Fred L. Curtis, sales manager of New Products; C. Leonard Shaw, publicity manager, and Irving W. Stanton, exhibition engineer.



Application of Norton Rokide Spray Coatings will be demonstrated at National Metal Congress & Exposition in Cleveland Oct. 8-12.

★ ★ ★

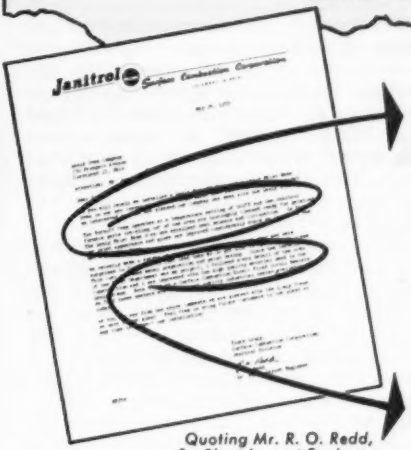
Three compounds recently added to the Oakite line of barrel finishing materials will be featured at Booth No. 941 at the National Metal Congress and Exposition, by **Oakite Products, Inc.**, New York, N. Y., manufacturer of cleaners and metal treatments.

Oakite FM 183 is an alkaline abrassive type compound designed for deburring steel, stainless steel, and zinc die castings; Oakite FM 184 is an acidic compound designed to deburr, remove heat scale, and brighten steel, stainless steel, copper, and brass parts; Oakite FM 186 is an alkaline product designed to produce a brighter finish and better color on zinc die castings. Demonstrations of these materials will be conducted during the course of the Exposition.

Oakite will also feature Oakite ChromiCoat, a conversion coating for aluminum; Oakite Rinsite, a rinsing additive that is said to prevent spotting on plated work and corrosion between finishing operations; and the Oakite CrysCoat phosphating process.

Martin F. Maher, Jr., manager of Oakite's metal industries division, will be in charge of the booth. He will be assisted by F. H. Bruening, Cleveland

Janitrol Divisions — *Surface Combustion Corporation*
COLUMBUS 16, OHIO



Quoting Mr. R. O. Redd, Sr. Plant Layout Engineer

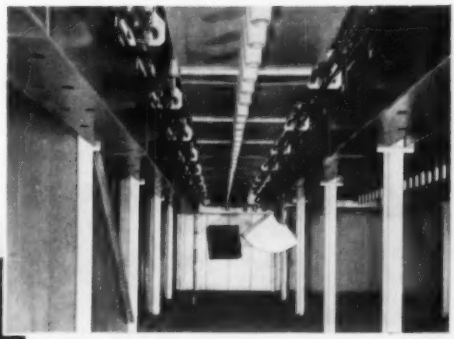
The LANLY Paint Bake Oven

HAS EXCELLENT HEAT BALANCE AND CIRCULATION. IN FACT OUR PAINT APPEARANCE AND GLOSS HAS IMPROVED CONSIDERABLY SINCE WE INSTALLED THE NEW LANLY BAKE OVEN

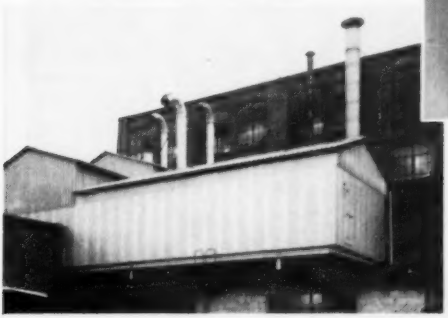
I was impressed with the high quality material used in the Lanly ovens.

Another of the nation's leading manufacturers attests to the efficiency and multi-fold merits of their LANLY OVENS.

Illustration below shows the ingenious manner in which LANLY engineers with the cooperation of The Surface Combustion organization, circumvented the problem of available factory floor space.



Showing a partial conveyor run in the LANLY low temperature paint bake oven.



YOU TOO CAN DO A BETTER JOB WITH LANLY OVENS

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LANLY FINISHING OVENS
THE LANLY COMPANY • 770 PROSPECT AVE
CLEVELAND, OHIO

For more data circle **195** on Reader Service Card

division manager; T. R. Smith, Detroit division manager; and technical service representatives R. J. Crane, H. W. Dieter, M. L. Hahn, A. Horst, E. Lacy, R. B. Lose, D. W. O'Leary, W. R. Pate, W. L. Russell, M. L. Stephens, and L. E. Welch. The men will make their headquarters at the Auditorium Hotel.

★ ★ ★

An indoor-type rust preventive which can be mixed with water, oil or solvent will be displayed by **E. F. Houghton & Co.** in Booth No. 1145, at the Metal Show in Cleveland, October 8-12. Identified as Rust Veto M.P., this rust preventive when mixed with water produces a non-volatile solution.

A transparent cutting concentrate that is said to permit increased machining speed and is used up to 1:150 with water will be demonstrated in a modern automatic screw machine during the show.

Special products for metal surface treatment will also be featured by Houghton. These will include phosphatizing compounds, blackening salts, "cold" cleaners, rust preventives, pickling inhibitors and liquid carburizers.

Fire resistant Houghto-Safe hydraulic fluid will be demonstrated in a special unit which sprays the fluid through the flame of a blow torch.

A degreaser especially fitted for demonstration purposes will be displayed by **G. S. Blakeslee & Co.** at the 38th National Metal Exposition in Cleveland, October 8-12.

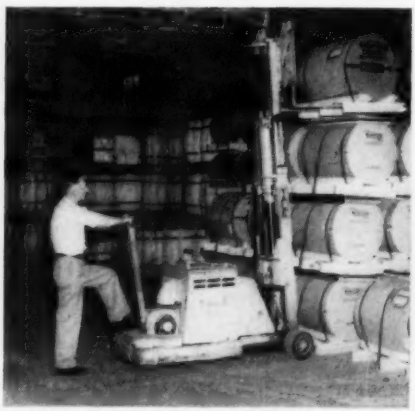
The machine is equipped so that it can be used to demonstrate the results obtained with any single type or combination of types of degreasing, including vapor-vapor spray; liquid immersion and vapor rinse; double liquid immersion followed by vapor rinse; and liquid immersion, spray and final rinse. Results of ultrasonic cleaning can also be shown: the unit has 144 inches of ultrasonic transducers.

This machine, while a demonstration unit, will be sold for use in applications requiring extreme versatility.

Blakeslee will be represented at tne show by the following men: A. L. Bashe, sales manager, Chicago, Ill.; J. Gonyeau, field engineer, Detroit, Mich., Larry Miller, field engineer, Cleveland, Ohio; C. D. Underwood, field engineer, Auburn, N. Y.; Bill Thiess, field engineer, Springfield, Ohio; Allan Wudi, field engineer, Indianapolis, Ind.; Frank Gelato and N. Evans, field engineers, Chicago, Ill.

COMPANIES

A space saving system of storing palletized grinding wheels has been



(Left) Larry Dauer and Joe Lippert of Norton Co. hold wooden saddle—key to space saving system. (Right) Larry Dauer stacks palletized grinding wheels using wooden saddle.

developed by Larry Dauer and Joseph Lippert of the **Norton Company's** Pittsburgh warehouse. Key to the system is a wooden saddle which fits between layers. Made of palletizing lumber and reinforced with a steel strap, this saddle makes it possible to stack pallets of grinding wheels three or four high. Former method of storage was by "pyramid" stacking. It is said that nearly twice as many pallets can be stacked in the same area using this system.

★ ★ ★

Applications of anodized aluminum for automotive trim purposes are increasing steadily. According to a survey conducted under the auspices of **Frederic B. Stevens, Inc.,** producer of automatic plating and anodizing equipment, 1957 models will reveal increased use of anodized aluminum.

Indications of a possible trend are shown on the chart below based on the Stevens survey.

plication for uminum Trim	1956 Automobiles	1957 Automobiles
Window Frames	3	6 or more
Grilles	4	6 to 8
Emblems	4	8
Moldings	3	6 to 9

The increase in aluminum trim on one 1957 model will be from 15 pounds to 27 pounds, according to one report.

Further indication of such a trend can be noted from an analysis of anodizing equipment sold. Sales of equipment in 1955 (for probable use in 1956) were nearly double the volume of the two preceding years combined. At the same time, sales of Stevens compositions used in buffing and polishing aluminum showed a 50 per cent increase, the company states.

★ ★ ★

Contract Engineering Company of Denver, Colorado, has been appointed agent for **Pennsalt Chemicals** corrosion-resistant products, department sales manager Robert R. Pierce has announced.

The company will represent Pennsalt in Arizona, New Mexico, Colorado, Wyoming and western Texas. It will handle the full line of Pennsalt coatings, cement mortars and interliners for corrosion-proof masonry construction and offer complete professional services in design and specification of chemical-resistant construction and coatings.

★ ★ ★

Frederic B. Stevens, Inc., Detroit 16, Michigan, has announced appointment of the **R. F. McGuire Company, Inc.,** 106 East Melvina St., Milwaukee 12, Wisconsin, as exclusive distributor for Stevens metal finishing equipment and supplies in the state of Wisconsin.

R. F. McGuire

The R. F. McGuire Company, Inc., is a new corporation headed by R. F. McGuire, formerly technical director and sales engineer for Donald Sales and Manufacturing Company, Milwaukee, Wisconsin.

★ ★ ★

The opening of a new sales office in St. Louis for the Cellulose Products Department of **Hercules Powder Company,** Wilmington, Del., has been announced recently.

The office will be located in the Continental Building, 3615 Olive Street, and will be under the direction of Robert R. Stover, technical sales representative.

The territory which will be serviced by this office includes southern Illinois, Missouri, Kansas, Oklahoma, and Texas.

★ ★ ★

Dalic Metachemical Limited has announced that the following additional

metals can be deposited from the Dalic Process: plating solutions, osmium and 95 per cent pure tungsten. A complete list of Dalic Plating Solutions may be obtained from Dalic Metachemical Limited, 121 Leicester Ave., Toronto, Canada.

★ ★ ★

V. Finston, president of **The Meaker Company,** Chicago, Illinois, has announced that **Platers Supply Co., Inc.,** 2311 Valley Avenue, Indianapolis 18, Indiana, has become the sales representative for that company covering Indiana and the northern portion of Kentucky.

★ ★ ★

Chlorinated rubber-oil dispersions, tall oil fatty acids and pentaerythritol will be featured in **Hercules Powder Company's** exhibit at the Annual Paint Industries' Show in Cincinnati, October 22-24.

A new technique of preparing Hercules chlorinated rubber (Parlon)-oil dispersions will be discussed.

The Hercules exhibit will be in Booths 316 and 317. Technical representatives will be in attendance at the exhibit throughout the show.

★ ★ ★

More than 35 manufacturers of machine tools which grind and polish with coated abrasives will exhibit their newest developments to the metalworking industry in a Metal Finishing Show to be held October 30 through November 2 in Cleveland, Ohio. The exhibit will be sponsored by **Behr-Manning Co.,** Troy, N. Y., a division of Norton Company, and will take place at 4101 W. 150th Street, the abrasives manufacturer's Cleveland branch.

This event will afford an opportunity to submit "problem children" components and products to actual grinding and polishing tests on coated abrasive machine tools developed in this country since 1954. For this specific purpose, exhibits will be staffed by technical representatives of the machine manufacturers, as well as by

Bringing you
Modern developments in plating processes and methods

HERE are the basic theories and principles of electroplating—the practical methods and processes that are of invaluable use to everyone concerned with electroplating and electrotyping. The most efficient methods of making electrodeposits on more than 40 different metals, alloys, and plastics are summarized completely in this thoroughly revised and enlarged book.

Principles of
ELECTROPLATING & ELECTROFORMING

By William Blum, Chemist, U. S. Bureau of Standards and George B. Hogaboom, Consultant

Revised 3rd Edition
455 pages, 6 x 9
24 tables, illus.
$7.00.

Completely revised to make it a more practical working guide, this book summarizes and digests the best of modern practice in the field. It covers qualitative, quantitative analyses of solutions; pickling, dipping; electropolishing; electroforming, electrotyping; producing phonograph record matrices, and manufacturing tubes, etc. Metals are dealt with in the same orders as in the periodic system of elements.

(Please send check with order)

PRODUCTS FINISHING, 431 Main Street, Cincinnati 2, Ohio

abrasives specialists of Behr-Manning.

Machines to be demonstrated, many for the first time, will range from heavy automatic and semi-automatic grinders used in automobile and appliance production to highly specialized belt machines which reach into small-radius contours. In capacity, they will cover the whole field of metalworking, from brute-force grinders capable of removing 0.100 inch per pass down to portable sanders and the miniature belt machines which polish the smallest of jet-engine blades with extreme precision.

Several times daily, Behr-Manning product engineers will conduct 30-minute classes, showing users when to specify aluminum oxide or silicon carbide abrasives, for example, for fast cutting and cool operation; comparing the performance of cloth and paper belts; discussing recommended belt speeds, grit sizes, coolants and lubricants; and demonstrating on steels, non-ferrous metals and alloys.

In addition, a new color motion picture on metalworking will have its first showing at the Cleveland exhibit.

★ ★ ★

Enthone, Inc., New Haven, Conn., manufacturer of chemicals and processes for metal finishing, has announced the appointment of **Ross Industries, Inc., 5890** Commonwealth Ave., Detroit, Michigan, as warehousing distributor for eastern Michigan.

Gilbert Valentine, Enthone technical service engineer, will work with Ross Industries at the Detroit office.

NEW POSITIONS

Guy A. Cummings, Metal Finishing sales manager, **Frederic B. Stevens, Inc.,** Detroit, Michigan, has announced the appointment of **Roger J. Brown** as Metal Finishing sales engineer for the western New York district, effective August 1, 1956. Brown will operate from the Stevens Buffalo office and handle the company's metal finishing accounts in western New York and sections of northwestern Pennsylvania.

Evans H. Hanson

Evans H. Hanson has been appointed assistant sales manager of **Paasche Airbrush Company.**

Mr. Hanson has been with Paasche Airbrush Company, a division of Cline Electric Manufacturing Company, for 20 years in key sales positions..

In his new position, Mr. Hanson will be in charge of national distribution of all Paasche products including art equipment, manual, automatic and portable air painting equipment, Jet-cool process and No-ink-Offset equipment for printers.

★ ★ ★

Douglas F. Woolley, Jr., has been promoted to sales engineer of **Pennsalt Chemicals'** Corrosion Engineering Department. In this capacity, Robert R. Pierce, Corrosion Engineering sales manager, announced, Mr. Woolley will specialize in assistance on corrosion problems in fields where application of Pennsalt's line of corrosion resistant coatings, linings, interliners, and acid proof cement mortars are used.

★ ★ ★

Econoveyor Corporation, Roslyn, L. I., N. Y., has announced that **Robert Gordon** has joined the sales engineering staff. Mr. Gordon will be operating in the New York metropolitan area.

★ ★ ★

E. I. duPont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware, has announced the appointment of **Cyril J. McKeown** to the position of industrial sales representative in Kansas City, Missouri. Mr. McKeown replaces K. E. Western, who has been transferred to St. Louis.

Appointment of **Peter J. Baier, Jr.**, to the newly-created position of manager of transportation sales for **Pittsburgh Plate Glass Company,** fiber glass division, has been announced by P. Dudley Kaley, manager of sales for the division.

★ ★ ★

C. Brooks Ricca has been named Philadelphia district sales manager for **Pennsalt Chemicals'** Metal Processing Products, and **James Carlin** has been assigned to the field sales staff, department manager John M. Davidson has announced.

★ ★ ★

Announcement has been made of the election of **Gale Blakeslee** to the presidency of **G. S. Blakeslee & Co.,** Chicago, Ill.

Mr. Blakeslee succeeds **G. R. Blakeslee,** who has become chairman of the board. **M. B. Pickett** has been elected vice president in charge of the industrial division sales and **T. V. Tegger** has been made treasurer. John Chat, general works manager, continues as secretary.

Ellis F. Farrell

Gale Blakeslee

Appointment of **Ellis F. Farrell** as assistant general manager of paint sales for the merchandising division of **Pittsburgh Plate Glass Company,** Pittsburgh, Pa., has been announced by Guy Berghoff, general manager of paint sales for the division. Mr. Farrell succeeds **Richard P. Bell,** who has been appointed assistant to the president of the company.

Russell E. Petersen has been appointed industrial sales manager of the **Rinshed-Mason Company,** Anaheim, California plant. The plant is located at 1244 N. Lemon St. Headquarters are in Detroit.

Claude E. Weekly

Russell E. Petersen

To expand new product service facilities, **MacDermid, Incorporated,** Waterbury, Conn., has appointed **Claude E. Weekly** to the newly created post of product service engineer.

Under Mr. Weekly's guidance, MacDermid product developments, originating in the company's research laboratories and tested in the new customer service laboratory, will be tested under production conditions in customer's plants. The first of several product service engineers, Mr. Weekly will devote full time to product testing and development in the field. He brings to the company more than twenty years of metal cleaning, plating and finishing experience.

Mr. Weekly has been active in all phases of metal finishing as foreman, supervisor of finishing rooms, metal finishing consultant and service manager. His most recent position with Promat Division of Poor & Co. He is a charter member and past-president of the Indianapolis Branch, American Electroplaters' Society.

As product service engineer, Mr. Weekly will work closely with manufacturers and other metal finishers on the correct use of MacDermid metal finishing products and processes.

Appointment of **Richard P. Bell** as assistant to the president has been announced by David G. Hill, president of the **Pittsburgh Plate Glass Company.**

During the past four years, Mr. Bell has served as assistant general manager of paint sales for the firm's merchandising division.

Richard P. Bell

Robert S. Spencer

Robert S. Spencer has been appointed district sales supervisor, Coated Abrasives Division of **Armour and Company,** for Ohio.

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Appointment of **Charles R. Keefe** as manager of industrial paint sales for the **Glidden Company** in the Southeastern Division has been announced by A. D. Duncan, Glidden vice president and general manager of the firm's paint division.

In his newly-created position Mr. Keefe will be responsible for the development of industrial paint sales in Georgia, Alabama, Florida, South Carolina and parts of Mississippi and Tennessee. He will be headquartered at Glidden's recently-expanded paint plant in Atlanta.

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Hanson-Van Winkle-Munning Company has announced the retirement of **Allen T. Baldwin,** manager of the company's flux sales department.

At the same time H-VW-M announced the appointment of **Warren H. McMullen** as metallurgist in charge of development, technical field and sales work in the company's No. 20 Flux and Fas Tin Flux programs.

Warren H. McMullen

Allen T. Baldwin

A veteran of 24 years with H-VW-M, Allen T. Baldwin is a leading authority in the fields of hot galvanizing and tinning techniques. His career at H-VW-M was devoted to developing new methods and techniques in these fields, with special emphasis on the development and use of flux.

Mr. Baldwin's contributions to the industry have been considerable. Many of the papers he prepared and presented to such groups as the Galvanizers' Committee, the A.E.S., and The A.S.M. are used as texts on the subject.

He will continue with H-VW-M as a flux consultant, in which capacity he will serve regularly in the development, servicing and promotion of the company's flux program. In addition, Mr. Baldwin will continue to be active in his newly established Baldwin-Gregory Co., Inc., a firm of consulting engineers which will act in an advisory capacity in the installation of equipment and product engineering in the galvanizing and tinning fields.

Warren H. McMullen joined H-VW-M in 1953, working in the company's laboratory on the metallurgy of all H-VW-M processes. In 1955 he began specializing in No. 20 Flux and Fas Tin Flux processes, studying these both in the company's laboratories and as a part of visits to customers' plants.

Enthone, Inc., New Haven, Conn., has announced a marketing program designed to increase service to customers in the New England-Middle Atlantic states area. In the first phase of this program, **Derick S. Hartshorn, Jr.,** has been promoted from sales and service engineer to district manager of the New York City, Westchester and Long Island area.

Peter Veit has been appointed to succeed Mr. Hartshorn as sales and service engineer.

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Paul N. Gillon, formerly in charge of the Office of Ordnance Research at Duke University, has been appointed manager of the Basic Research Branch of **The Carborundum Company's** Research Laboratory, according to an announcement by Leslie E. Simon, director of the division.

Bernard Kumko

John H. Sauntry

Bernard Kumko and **John H. Sauntry** have recently been appointed representatives for **Wyandotte Chemicals Corp.,** Wyandotte, Mich. Mr. Kumko will headquarter in Grand Rapids; and Mr. Sauntry in Chicago.

Messrs. Kumko and Sauntry have received several weeks of intensive training in product application at the Wyandotte Chemicals Research and Technical Service Laboratories and in selected industrial centers.

Theodore T. Peck has been elected vice president of **Chicago Vitreous Corporation,** Cicero 50, Illinois, manufacturer of porcelain enamel frits, according to an announcement by W. Hogenson, president.

Stephen J. Rudan

Theodore T. Peck

C. F. O'Donohue, president of **O'Donohue Sales Company,** Milwaukee, Wisconsin, distributor of metal finishing chemicals and supplies, has announced the appointment of **Stephen J. Rudan** as district representative in southern Wisconsin.

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Appointment of **Theodore E. Culler** to the newly created post of assistant manager of operations, merchandising division of **Pittsburgh Plate Glass Company,** has been announced by D. C. Burnham, vice president, merchandising division.

★ ★ ★

Two additions to the sales and service staff have been announced by **E. F. Houghton & Co.**

C. Guy Rivers has been appointed technical sales engineer in the Philadelphia area, southern New Jersey and the state of Delaware.

Named as hydraulic engineer in the Central New England area is **Edward L. Babcock.** His territory includes Worcester County and Hartford, Conn., with his headquarters in Houghton's Worcester sales office.

Frederick T. Keeler, director of the Marketing Division of **The Carborundum Company,** Niagara Falls, N. Y., has announced several organization changes and appointments in this Division of the company.

J. W. Bralts has been appointed manager of the Market Research Branch, while **Carl B. Wille** has been made administrative assistant to the director of Marketing.

E. Wesley Martin has been appointed to the newly established position of manager, District Administration Branch, and **Robert W. Johnson** has been named economist and manager of the new Economic Analysis Branch.

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Joseph Vouglas has been appointed sales engineer in the Plating and Electrochemicals Department of **Federated Metals Division of American Smelting and Refining Company,** New York, N. Y., it has been announced by Sherman Goble, manager of the department. Mr. Vouglas will make his headquarters at the Newark office and cover the eastern sales territory which embraces New York, Connecticut, New Jersey and Pennsylvania.

MEETINGS

The **Annual Meeting of the Philadelphia Branch, A.E.S.,** will be held on Saturday, October 20, in the Benjamin Franklin Hotel, Philadelphia, Pa.

The educational program will include the following papers:

1. *"Mechanism of Corrosion of Plated Coatings,"* by Dr. Harold J. Read, Professor of Physical Metallurgy, Pennsylvania State Univ.
2. *"Double Layer Nickel Coatings—Corrosion Behavior and Protective Value,"* by Clarence H. Sample, Development and Research Div., International Nickel Co.
3. A paper on supplemental treatments of nickel-chromium coatings to improve protection.

The educational session, which will begin at 2:00 P.M., is under the direction of Dr. A. Kenneth Graham, president of Graham, Crowley & Associates and former A.E.S. executive secretary. The banquet, which will be followed by a floor show and dance, is scheduled to begin at 7:00 P.M.

Tickets are $7.50 per person. They may be obtained from Robert L. Farren, Jr., Aetna Electroplating Co., 7770 Dungan Rd., Philadelphia 11, Pa.

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For the fifth successive year a **Lacquer Information Center** will be featured at the **Annual Paint Industries' Show** in Cincinnati, October 22-24.

Once again the exhibit is being presented through the cooperative effort of suppliers of basic raw materials for lacquer. The theme this year is "Unlimited Markets for Lacquer." The exhibit will depict the latest developments in lacquer technology, formulation, and application.

The companies which are cosponsors of this year's Lacquer Information Center are: Antara Chemicals Division, General Aniline and Film Corporation; Carbide and Carbon Chemicals Company (a division of Union Carbide and Carbon Corporation); Celanese Corporation of America; Davison Chemical Division, W. R. Grace & Company; The Enjay Company, Inc.; Hercules Powder Company; Olin Mathieson Corporation; Pennsylvania Salt Mfg. Co.; Shell Chemical Corporation; Columbian Carbon Co.; and Sprayon Products, Inc.

Exhibits of the latest work on nitrocellulose-acrylic resin blends in automotive lacquers, exhaustive service-testing of floor finishes, the new one-coat air-drying hammer-finish lacquers, and specialty formulations for film, foil, and sheeting will be featured.

Technical representatives from the cosponsoring companies will be available to discuss problems.

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The North Central Regional Meeting of the **National Association of Corrosion Engineers** will be held in

Detroit, Mich., at the Statler Hotel, November 15-16.

Registration will take place from 6:30 to 9:00 P.M. on November 14 and from 8:00 P.M. to 5:00 P.M. on November 15. General chairman of the convention is Walter Cavanagh of the Parker Rust Proof Company.

The technical sessions will include symposia for the construction, utilities, chemical and automotive industries. Listed below are the papers which are of most interest to people in the Finishing Industry:

Inhibitors of Mineral Acids on Mild and Stainless Steels, by J. P. Engle and R. B. Rosene, Dowell, Inc.

Accelerated Corrosion Tests for Plated Coatings, by W. L. Pinner, Research and Engineering Div., Houdaille Industries, Inc.

The Role of Finishing in the Prevention of Automotive Body Corrosion, by E. L. Leithauser, Research Staff, General Motors Corporation.

Resistance to Corrosion of Aluminum Alloys for Automotive Applications, by E. T. Englehart, W. C. Cochran and E. P. White, Alcoa Research.

Highlighting the convention from the social side will be the Fellowship Hour and Banquet to be held at 6:00 P.M. on November 15 in the English Room of the Statler Hotel. The Fellowship Hour will be sponsored by several companies in the Detroit area. At the banquet W. H. Stewart, vice president of NACE, will be the speaker, discussing *NACE—Its Aims and Value to Its Members.*

Plant trips are planned to the Chrysler Corporation assembly line, Wyandotte Chemicals Corp., International Salt Co. mine, and the Hiram Walker Distillery.

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The Third Annual Tri-State Regional Meeting, A.E.S., will be held on March 30, 1957, at the French Lick-Sheraton Hotel, French Lick, Indiana. The host for this meeting is the Indianapolis branch. Members of the Tri-State Region include the Dayton, Columbus, Cincinnati, and Louisville branches.

SOCIETIES

Dr. Walter R. Meyer, president, **Enthone, Inc.,** New Haven, Conn., presided at the Joint Electrodeposition—Theoretical Electrochemistry Symposium on Structure of Metallic Electrodeposits for the Cleveland Annual Meeting of the **Electrochemical Society** on Monday, October 1, 1956. The meeting was held at the Hotel Statler, Cleveland, Ohio, from September 30 through October 4.

Dr. Meyer has also been reappointed as an **American Electroplaters' Society** representative to the **International Conference for Electrodeposition.** This conference is held jointly with the Institute of Metal Finishing of England with the next scheduled meeting to be in Detroit in 1959.

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The Central Michigan Branch of the **A.E.S.** has opened the 1956-57 season with its Annual Stag Golf Outing at the Arbor Hills Country Club, Jackson, Michigan. The program of lunch, golf and dinner was enjoyed by 138 members and guests.

TRAINING COURSES

Joseph B. Kushner, director of the **Joseph B. Kushner Electroplating School,** Stroudsburg, Pa., has announced the second and third prize winners of the school's annual essay contest for a free home study course in modern electroplating entitled, "Electroplating Know How."

L. J. Erckman

Louis T. Dabrowski

They are, respectively, **L. J. Erckman,** a senior standards engineer for Link Aviation, Inc., and **Louis T. Dabrowski,** an engineer with the Canada Wire & Cable Co., Toronto. Each received a Sur-Ten Meter, an instrument for measuring surface tension.

NECROLOGY

Nathan Ransohoff, 68, founder and chairman of the board of **Ransohoff, Inc.,** Hamilton, Ohio, died of cancer at his home in Cincinnati, Ohio, on September 25.

Mr. Ransohoff was a graduate of the Massachusetts Institute of Technology. He founded Ransohoff, Inc., maker of barrel finishing equipment, cleaning machinery and painting equipment, in 1929. He was a member of the American Society of Chemical Engineers and the Engineering Society of Cincinnati.

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CORRECTION

In the section of the article, "Training Courses in Finishing," published in the September issue of PRODUCTS FINISHING, incorrect instructions were given in the portion describing the spray painting courses offered by Binks Manufacturing Company.

The last paragraph of this particular item should have read as follows: "Because of the small size of the class, it is important that application for attendance be made as far in advance as possible. This may be done by writing **Binks Manufacturing Co.,** 3122 W. Carroll St., Chicago 12, Ill."

Remaining classes in the 1956 fall term will be given on November 12-16 and December 3-7.

MEETINGS of INTEREST to FINISHERS

Oct. 8-12. National Metal Congress & Exposition, American Society For Metals, Public Auditorium, Cleveland, Ohio.

October 10-12. Third National Symposium on Vacuum Technology, Committee on Vacuum Techniques, Inc., Hotel Sheraton, Chicago, Ill.

Oct. 20. Annual Educational Session and Banquet, Philadelphia Branch, A.E.S., Benjamin Franklin Hotel, Philadelphia, Pa.

Oct. 21-24. 34th Annual Meeting and 21st Paint Industries' Show, Federation of Paint and Varnish Production Clubs, Netherland-Hilton Hotel, Cincinnati, Ohio.

Nov. 7-9. 18th Annual Shop Practice Forum, Porcelain Enamel Institute, Inc., Urbana-Lincoln Hotel and University of Illinois, Urbana, Ill.

Nov. 15-16. North Central Regional Meeting, National Association of Corrosion Engineers, Statler Hotel, Detroit, Mich.

March 30. Third Annual Tri-State Regional Meeting, A.E.S., French Lick-Sheraton Hotel, French Lick, Ind.

June 16-20. 44th Annual Convention, A.E.S., Sheraton-Mount Royal Hotel, Montreal, Canada.

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PRODUCT LITERATURE

46. Silicone Finishes
Literature on Stanley silicone high temperature resistant finishes. Stanley Chemical Co., 31 Berlin St., East Berlin, Conn.

47. Heat Processing Equipment
Bulletin No. 560 describes units designed for many applications in heat processing. Brief outline serves as a guide to selecting heat processing equipment to do a specific job. The Lanly Co., 760 Prospect Ave., Cleveland 15, Ohio.

48. Barrel Finishing Equipment
Information on the Mity-Mite line of barrel finishing equipment. Speed-D-Burr Corp., 3613-C San Fernando Rd., Glendale 4, Calif.

49. Finishing Systems
Complete information on integrated systems for surface preparation, painting, air make-up, and conveying. George Koch Sons, Inc., Dept. P-66, Evansville, Indiana.

50. Silk Screens
Information on silk screens for all industrial decorating processes. Cincinnati Screen Process Supplies, Inc., 43 Walnut St., Cincinnati 2, Ohio.

51. Industrial Finishes
Information on applications for a complete line of organic finishes, including baking enamels, hammer finishes, surfacers, undercoaters, clear and colored lacquers, vinyls and synthetics. James B. Day & Co., 1872 Clybourn Ave., Chicago 14, Illinois.

52. Demineralizing Data
Technical Reprint T-140, an article on all the phases of demineralizing. The paper considers some of the developments, trends and applications of both multi-bed and mixed-bed ion exchange. Graver Water Conditioning Co., 216 West 14th St., New York 11, N. Y.

53. Radiant Heat Oven
Advantages of Burdett "Radiant Heat" conveyor type ovens (short baking cycle, uniform bake, close control) are discussed. Burdett Manufacturing Co., 4916 S. Monitor Ave., Chicago 38, Ill.

54. Electroplating Nickel on Aluminum
Paper describing a method of electroplating aluminum alloy with an adherent deposit of hard nickel. Also describes test for checking adhesion. International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.

55. Why Hot Spray?
Booklet explains advantages of the hot spray process. Spee-Flo Corp., Dept. PF, 720 Polk, Houston, Texas.

56. Restore the Luster
Details on Newco No. 7, a compound which can be wiped on and wiped off to remove stains from chromium, bronze, brass, stainless steel, copper, nickel and silver. Newcomb Products Co., 3802 Payne Ave., Cleveland 14, Ohio.

57. Metal Preparation Materials
Booklet lists and describes a variety of materials useful in metal finishing—alkali cleaners, strippers for anodized coatings, burnishing compounds, rust protection materials, emulsion cleaners, phosphatizing products, scale removers, blackening compounds and others. Angler Chemical Co., 274 S. Walpole St., Walpole, Mass.

58. Filters
Technical literature on filters for liquid clarification or solids recovery. Bart-Messing Corp., Dept. PF-9, 229 Main St., Belleville 9, N. J.

59. Paint Pumps
Bulletin 701 describes a line of pumps for paint circulating systems. These pumps fit directly on the drum, constantly recirculate the paint between the guns and the drum, thus keeping all guns spraying uniform material and preventing settling of paint solids in the drums. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

60. Counter-Rotating Laboratory Mixer
Data Sheet 071-a tells how two counter-rotating propellers produce effective mixing results in a minimum time. Brookfield Engineering Laboratories, Inc., Stoughton 11, Mass.

61. Automated Barrel Finishing
Catalog gives detailed information on Almco Sub-O-Matic Systems for automating barrel finishing. Includes details on automatic programming, multiple and skip station systems, in-line systems, and automatic materials handling devices. Almco Div., Queen Stove Wks., Inc., 83 Marshall St., Albert Lea, Minn.

62. Sodium Hyride Descaling
Bulletin gives technical information on the sodium hydride descaling process, how it works, equipment needed. Electrochemicals Dept. PF-8, E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.

63. Electropolishing Steel
Bulletin tells what Ferro-Glo 500 will do, how to operate the bath. This material is formulated for electropolishing low and medium carbon steels. Electro-Glo Co., 1436 S. Talman Ave., Chicago 8, Ill.

64. Polishing Wheel Cement
A folder describing Ad-Lea-Sive, a glue-base adhesive, may be obtained from The Lea Mfg. Co., 16 Cherry Ave., Waterbury 20, Conn. Complete information and general and special instructions for the use of this adhesive are given.

65. Paint Finish Additive
Arnex, a clear liquid compound, when blended with standard primers and finish coatings is said to improve drying speed, improve adhesion and appearance of the films formed. Arnex Chemical Co., Div. of Olo Paint Corp., 9808 Meech Ave., Cleveland 5, Ohio.

66. Horizontal Plating Barrels
Catalog shows complete line of barrel plating equipment, includes helpful data sheets on depositing cadmium, copper, nickel, tin, and zinc. Lasalco, Inc., 2820 LaSalle St., St. Louis 4, Mo.

67. Washing Machine
Bulletin contains detailed description of operating features of the International Automatic-Indexing Fixture-Type three-stage industrial washing machine. International Conveyor and Washer Corp., 652 E. Fort St., Detroit 26, Mich.

68. Pre-Cut Spray Masks
Leaflet tells how to paint trademarks and insignias, other patterns, with aid of self-sticking die-cut masks. Mystik Adhesive Products, 2635 N. Kildare Ave., Chicago 39, Ill.

69. Electrostatic Spray Painting
Booklet tells the complete story of Ransburg No. 2 Process Electrostatic Painting . . . advantages, photos of typical installations, scope of the process, requirements in equipment. Ransburg Electro-Coating Corp., Indianapolis 7, Ind.

70. Ovens and Dryers
Information on complete line of ovens and dryers. Continuous conveyor ovens, recirculating ovens, rack loading ovens, cabinet ovens. W. S. Rockwell Co., 2906 Eliot St., Fairfield, Conn.

71. Automatic Plating Machines
Diagrams illustrate operational advantages of Udylite automatic plating machines. Complete description of these machines, their outstanding features. Udylite Corp., Detroit 11, Mich.

72. Chlorinator
Bulletin contains detailed technical information on Series A-712 V-notch Chlorinator, which is useful in treatment of plating waste solutions. Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.

73. Burnishing Shapes
Catalog on Abbott burnishing shapes: ball, ovaball, cone, diagonal and pin. Applications for each are described. The Abbott Ball Co., 1064 New Britain Ave., Hartford 10, Conn.

74. Buffers—Polishers
Catalog illustrates and describes 16 different types and sizes of buffing and polishing machinery. The Standard Electrical Tool Co., 2518 River Rd., Cincinnati 4, Ohio.

75. Stainless Steel Buffing Composition
Information on K260G stainless steel buffing composition. The Buckingham Products Co., 14100 Fullerton Ave., Detroit 27, Mich.

76. Pre-Cut Masks
Bulletin 160-C tells advantages of using Brady Pre-Cut Masks in spray painting operations. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 12, Wisconsin.

77. Finishing Equipment
Catalog describes company's line of dust control systems, industrial ovens, blast cleaning equipment and tumbling mills. The W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

78. Electrolytic Cleaning Compound
A bulletin describing Alkon, an electrolytic cleaning compound for ferrous and cuprous metals. The DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

79. Sheet Polishers
Literature contains detailed information on techniques and equipment for grinding and polishing flat sheets. The Hill Acme Co., 1209 W. 65th St., Cleveland 2, Ohio.

80. Tumbling Chips
Catalog lists types and sizes of tumbling chips. Universal Tumbling Supply Co., 14337 Mansfield, Detroit 27, Mich.

81. Plastisols
Information on protecting racks and lining tanks with plastisols. Includes information on primer systems for obtaining better adhesion. Chem Products, Inc., Rocky Hill 10, Conn.

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82. Tumbling Abrasives
Folder describes advantages of using Exolon tumbling abrasives to obtain more uniform results in tumbling precision parts. The Exolon Co., 943 E. Niagara St., Tonawanda, N. Y.

83. Filter
Bulletin F-3501 gives complete technical details on Murray-Way automatic self-cleaning filter. Murray-Way Corp., P.O. Box 180, Maple Rd. East, Birmingham, Mich.

84. Cold Degreasing Solvent
Details on a material that can be used to degrease metal without heat or rinsing. Fact Sheet No. 2. Octagon Process, Inc., Staten Island 1, N. Y.

85. Rectifiers
Catalog describes and illustrates a complete line of selenium rectifiers designed for electroplating, anodizing. Rapid Electric Co., 2877 Middletown Rd., New York 61, N. Y.

86. Zinc Brightening Agent
Technical details on recently-introduced product, Promat Z-B-2, for brightening zinc deposits. Promat Div., Poor & Co., 851 S. Market St., Waukegan, Ill.

87. Roller Coating
Fact file of "Cost Cutting Ideas in Finishing." Gasway Corp., 6463 N. Ravenswood Ave., Chicago 26, Ill.

88. Rubberized Abrasives
Abrasive wheels, points, blocks, sticks and cones. Recommended for cleaning, blending, lapping, finishing, trimming. Catalog No. 53 includes operating suggestions and recommendations. Cratex Mfg. Co., 81 Natoma St., San Francisco 5, Calif.

89. Touch-Up Tool
Folder gives details on aerosol-packaged paints for use in touch-up work. Sprayon Products packages and loads any type of paint under the user's label. Sprayon Products, Inc., 2075 E. 65th St., Cleveland 3, Ohio.

90. Rectifier Study
Technical study of Ther Reactron compares it to other methods in relation to voltage control, other factors. Ther Electric & Machine Wks., 13A S. Jefferson St., Chicago 6, Ill.

91. Paint Pumps
Catalog describes Balcrank Jet Power Pumps for paint, designed to withstand abrasion of such paints as red-oxide primers. Balcrank, Inc., Dept. 28, 42 Disney St., Cincinnati 9, Ohio.

92. Polishing and Buffing Lathes
Catalog describes and illustrates complete line of polishing and buffing lathes. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

93. Filter Pump Units
Bulletin 102 describes newly-designed filter pumps for highly-corrosive solutions. Pumps are self-priming, leakproof, centrifugal type, all plastic, incorporate backwashing features. Remove particles down to 1 micron. Sethco Mfg. Co., 70-72 Willoughby St., Brooklyn 1, N. Y.

94. Buffing Die Castings
Catalog describes advantages of the Churchill Finger Buff No. 150 DN, developed specifically for buffing die castings. Geo. R. Churchill Co., Inc., Dept. PF, Hingham, Mass.

95. Airpainting Equipment
Bulletin MAP 10-55 lists and describes complete line of parts, accessories, and complete set-ups for manual spray painting. Includes Multiplehead Airbrushes, extensions for coating the inside of containers, airbrushes for special applications, limited production airbrushes, manual and automatic striping units, flock equipment and flock booths, cups, air and fluid hoses and couplings, valves and fittings, and portable Airpainting units. Paasche Airbrush Co., Div. of Cline Electric Mfg. Co., 1909 W. Diversey Pkwy., Chicago 14, Ill.

96. Aluminum Cleaners
Brochure describes line of aluminum cleaners, outlines systems that are being used successfully to prepare aluminum for welding. Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Mich.

97. Ultrasonic Cleaning Equipment
Model AP-10-B ultrasonic cleaner is designed for benchtop cleaning of small, delicate, intricate parts that must be completely clean. Literature gives complete details. Branson Ultrasonic Corp., 37 Brown House Rd., Stamford, Conn.

98. Roller Coaters
Descriptions of 5 roller coaters: models for everything from experimental work to heavy-duty units for high production roller coat painting. Union Tool Corp., Warsaw, Ind.

99. Spray Booth Filter
Specially-designed filter improves spray booth efficiency by filtering paint, varnish and lacquer from water wash spray booth water. Industrial Filtration Co., 166 Industrial Ave., Lebanon, Ind.

100. Scientific Cleaning
Bulletin describes company's "pH controlled" cleaners for metals. Kelite Corp., 81 Industrial Rd., Berkely Heights, N. J.

101. Spray Decorating Equipment
Complete catalog of equipment for spray decorating. Includes masks, vacuum plating racks, painting machines of all types, mask washers, paint wipers, combination paint-and-wipe machines, painting fixtures, decorating screens and roller coaters. Finish Engineering Co., 1115 Cherry St., Erie, Pa.

102. One-Step Stripper
R & P Paint Stripper is said to remove rust, paint, oil, phosphate coatings and all types of soils. Metasurf Corp., 12830 Eaton, Detroit 27, Mich.

103. Heat Transfer
Data on heat-transfer in a wide range of industrial applications. Tranter Manufacturing, Inc., Platecoil Division, Lansing 4, Mich.

104. Backstand Idler
Data on backstand idler equipped with foot control for easy changing of abrassive belts. Curtis Machine Corp., 1300 E. Second St., Jamestown, N. Y.

105. Maintenance Spray Painting
Catalog of equipment designed for maintenance spray painting. DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio.

106. Polishing Hand Tools
Informative booklet entitled "Grinding and Polishing Hand Tools with the 3M Method." Minnesota Mining & Mfg. Co., Dept. FH-95, St. Paul 6, Minn.

107. Rust-Inhibiting Metal Cleaner
Various features of Expray-AP, a new alkaline spray cleaner for removing fabricating soils and preventing rust prior to finishing. Wyandotte Chemicals Corp., J. B. Ford Div., Wyandotte, Mich.

108. Water Still Catalog
Catalog provides comprehensive technical information on the complete line of Barnstead Water Stills, from laboratory models to large industrial units. Barnstead Still & Sterilizer Co., 130 Lanesville Terrace, Boston 31, Mass.

109. Hot-Lacquer Process
Booklet entitled, "Questions and Answers about the Hot-Lacquer Process." This folder features many questions and answers about the formulation, application and properties of hot-spray lacquers. Hercules Powder Co., 927 Market St., Wilmington 99, Delaware.

110. Buffing and Polishing Compounds
Bulletin CO-103 describes characteristics and uses of 100 buffing and polishing compounds. Contains chart which recommends cutting and coloring compounds to be used with twelve different metals. Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

111. Silicone Products
Reference Guide to Dow Corning Silicone products. Products are listed by application in the index, which gives the proper silicone to use for each application and the page number of information. Dow Corning Corp., Midland, Mich.

112. Gloss Meter
Bulletin No. 167 describes Gardner Automatic Gloss, Color and Reflectance Recorder. Gardner Laboratories, Inc., Bethesda 14, Md.

113. Degreasers
Description of several types of degreasers, including vapor, vapor spray, liquid-liquid-vapor, pit type and conveyorized degreasers, and solvent recovery stills. Circo Equipment Co., 51 Terminal Ave., Clark (Rahway), N. J.

114. Blast Cabinet
Bulletin describes Pangborn EN-2 Airblast Cabinet, designed to be used for cleaning smaller parts. Pangborn Corp., 5000 Pangborn Blvd., Hagerstown, Md.

115. Heaters and Heating Devices
Bulletin GEC-1005G contains application index, calculating data, specifications and operating information for G-E heaters and heating devices. Included are immersion, strip, cartridge, tubular, fin, and railroad switch heaters; unit heaters, soldering irons, glue pots, soft-metal melting pots, oven equipment, and controls. General Electric Co., Schenectady 5, New York.

116. Processing Stainless Steel and Aluminum
Story in a recent issue of *Oakite News Service* describes processing of stainless steel and aluminum for use in manufacture of airborne kitchens, from cleaning after fabricating operations to the removal of heat discoloration after welding. Describes the deoxidation of aluminum for spot welding. Oakite Products, Inc., 54C Rector St., New York 6, N. Y.

117. Washing Machine Cleaner
Detailed information on Cowles QC Washing Machine Cleaner, formulated to loosen and emulsify soils, do it without foaming. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

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Product Literature . . .

118. Dust Problems
Answers to five basic dust problems are contained in literature available from American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.

119. Magnesium Alloy Dust and Fumes
Informative brochure, "Wet Method is Best," which fully describes methods of collecting and controlling magnesium alloy dust and fumes which, among other metals, can create hazards during processing operations when improperly handled. Peters-Dalton, Inc., 17908 Ryan Rd., Detroit 12, Mich.

120. Planning to Paint a Pyramid?
Interesting booklet gives information on Epon-based finishes. Shell Chemical Corp., Chemical Sales Div., 380 Madison Ave., New York 17, N. Y.

121. Rhodium Plate
Data on properties and applications of rhodium plate. Baker & Company, Inc., 113 Astor St., Newark 5, N. J.

122. Wet Blasting
A series of folders describe application for the Pressure Blast wet blasting process. Cro-Plate Company, Inc., 747 Windsor St., Hartford, Connecticut.

123. Electrocleaner
Illustrated brochure on Diversey No. 12 electrocleaner. Metal Industries Dept., The Diversey Corp., 1820 Roscoe St., Chicago 13, Ill.

124. Water-Reducible Coatings
Bulletin describes the advantages of Uni-Mulsion water-reducible enamels, primers and clears. Universal Paint & Varnish, Inc., Northfield & Krick Rds., Bedford, Ohio.

125. Liquid Filters
Bulletin No. 20 gives information on vertical plate and frame liquid clarifying filters. Units are designed for filtering plating solutions, varnishes, lacquers, or solvents. Gives operating procedures, engineering data, specification table, diagrams. Brosites Products Corp., 50 Church St., New York 7, N. Y.

126. Protective Coating Catalog
Catalog describes the Amercoat method of controlling rust and corrosion. Amercoat coatings are formulated to protect structural steel, tanks, piping, ductwork and other types of industrial structures and equipment. Amercoat Corporation, Dept. E1, 4809 Firestone Blvd., South Gate, Calif.

127. Emulsion Cleaner
Literature describes advantages of using Enthone Emulsion Cleaner 75. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

Opportunity Section

Space in this section is available for ***Classified Advertising.*** For rates and other information address: **PRODUCTS FINISHING, 431 Main St., Cincinnati 2, Ohio**

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Consultants and specialists in corrosion, weathering and sunlight testing.
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Kirk & Blum Batch Type Drying Oven
16' 7" long; 8' 4" wide; 9' 10" high
Opens at each end.
VULCAN CORP.
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Write for your copy on your company letterhead to:
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431 Main St. Cincinnati 2, Ohio

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Finishing Systems — Parts Washers — Dust Collecting

Territories available to qualified manufacturers' representative. Must have prior record of selling equipment and installations to major companies. Opportunity to represent a major midwest manufacturer. Your detailed reply will be held confidential. Box 101, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

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Solventol Chemical Products, Inc., manufacturers of industrial washers and cleaning chemicals, has several openings for men with the following experience:

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2) **Must be a self-starter**
3) **Must want to grow and prosper with a growing company**
4) **Must be experienced in metal cleaning.**

Salary, commission and expenses. Address in confidence to

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Unusual Sales Opportunities

Fast growing manufacturer of infra-red baking and drying units and ovens offers a splendid opportunity to several successful manufacturers' representatives and salesmen now selling allied lines of equipment directly to users. Several excellent territories in Michigan, southern Ohio, Minnesota, Wisconsin, Alabama, Georgia and Florida, now open with almost unlimited earning possibilities on a liberal commission plan. Write (do not phone) giving complete information on experience, lines now handled and territory covered. Information given will be treated confidentially. DRIQUIK Div. Dry Clime Lamp Corp., Greensburg, Indiana.

QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

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6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

Hundreds of other items used in buffing and polishing plants.

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for small parts, mfd. at New Brunswick, N. J. 20′ long with rinsing, washing and cleaning sections, 3′ wide, 3′ high with motor pumps, blower and rotating cylinder. Type PD-18-WRD, with temperature controls and starting equipment.

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12 Steiner Ives and Gehnrich Paint Baking and Drying Ovens: electric, all sizes; full automatic, recirculating type with controls, fans, blowers.

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"Gus, old pal, would you mind turnin' on the water?"

66% Savings

IN SOLVENT CONSUMPTION

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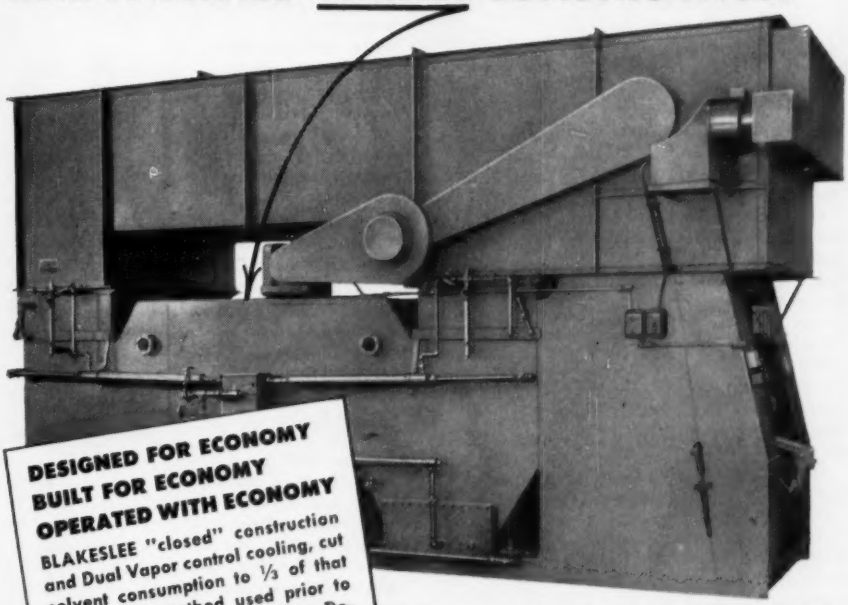

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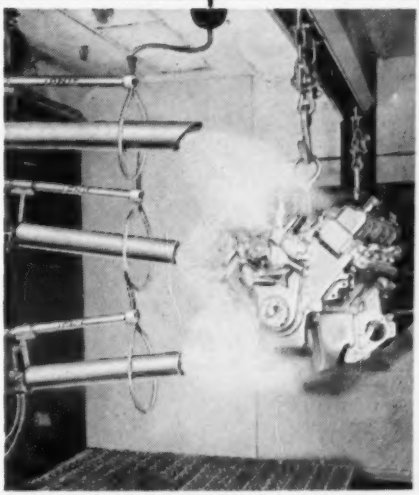
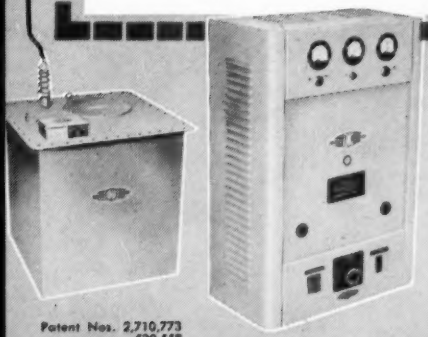
"IONIC" ELECTROSTATIC SPRAY EQUIPMENT

by Scientific Electric

now in use at CHRYSLER





Patent Nos. 2,710,773
530,558
Other patents applied for

Scientific Electric's "Ionic" Spray System is being used at Chrysler Corporation's new Plymouth "Qualimatic" Engine Plant in Detroit, to apply highly conductive aluminum paint to their automotive engines.

As used by many leading manufacturers, the "Ionic" high potential Electrostatic System provides a highly accelerated rate of finishing with substantial paint savings.

Whether your needs are extensive, or for every day small production, Scientific Electric can assist you. Technical consultation and free demonstration given upon request.

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- Minimum Paint Consumption
- No Rentals
- Higher Product Quality

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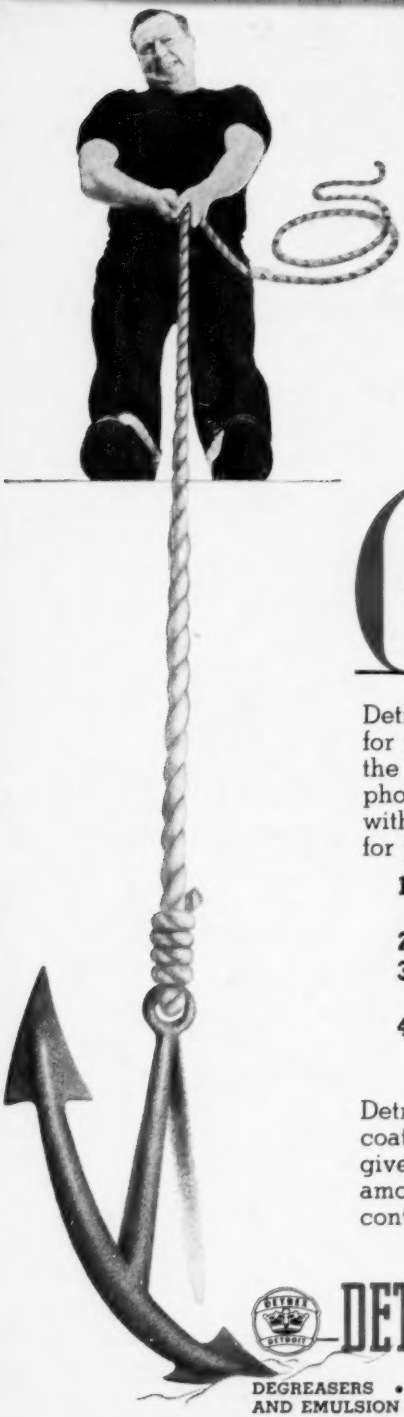

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WITH

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Detrex Paintbond provides positive anchorage for your paint finish . . . permanently locking the paint to the metal. Paintbond is a zinc phosphate coating which chemically interlocks with the metal surface, providing the ideal base for paint finish.

1. It completely seals metal surface from moisture and other causes of corrosion.
2. It retards corrosion if the finish is scratched.
3. When scarring penetrates the metal, Paintbond restricts rust to the area of the scar.
4. It improves product appearance . . . smoother surface, more lustrous paint finish.

Detrex Paintbond will save you money, too! It coats a larger surface area per drum—or will give you a heavier coating with the same amount of compound. You also have greater control of coating weight and crystal size.

Dept. A-708

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